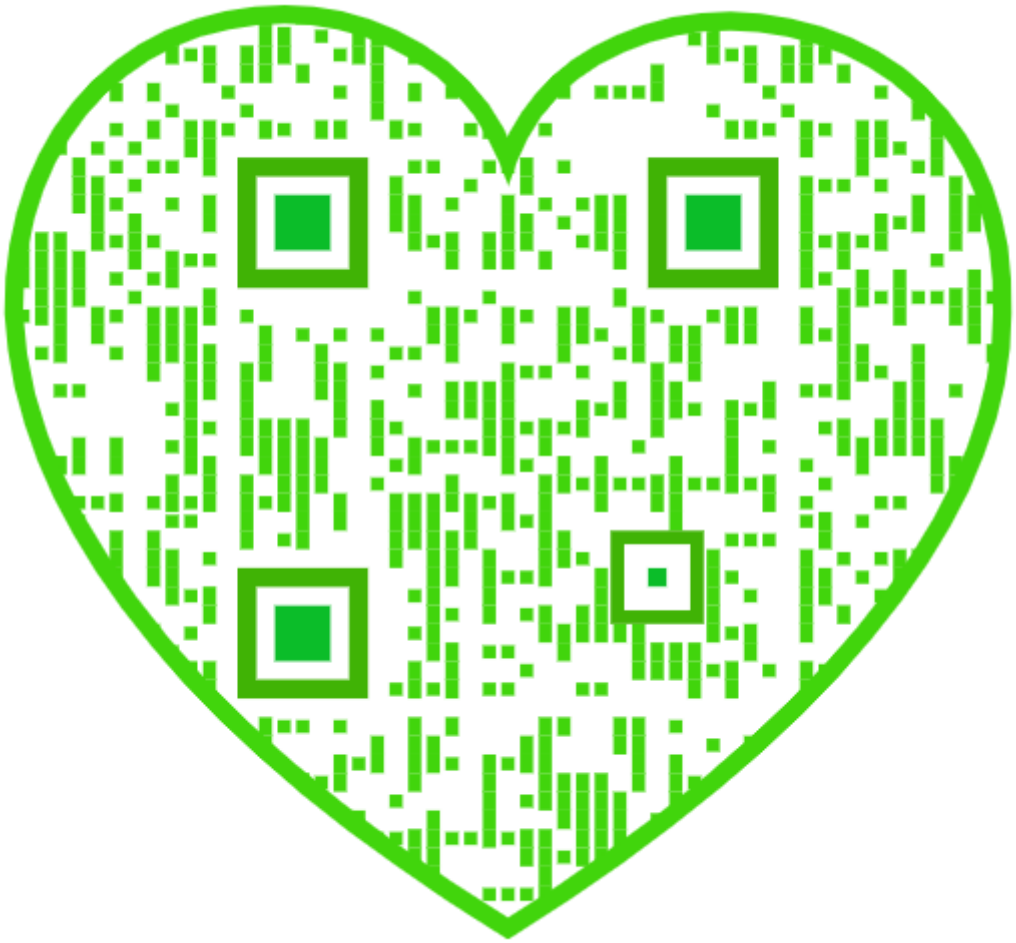

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PROFITABLE HERB GROWING AND COLLECTING

COUNTRY
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LIFE

PROFITABLE HERB GROWING AND COLLECTING

BY

ADA B. TEETGEN

WITH A PREFACE BY

E. M. HOLMES, PH.C., F.L.S., ETC.

"Excellent Herbs had our fathers of old—
Excellent herbs to ease their pain,
Alexanders and Marigold,
Eyebright, Orris, and Elecampane."

RUDYARD KIPLING.

LONDON:

PUBLISHED AT THE OFFICES OF "COUNTRY LIFE," 20, TAVISTOCK STREET, COVENT GARDEN, W.C., AND BY GEORGE NEWNES, LTD., 8-11, SOUTHAMPTON STREET, STRAND, W.C. NEW YORK: CHARLES SCRIBNER'S SONS

1916

TO

ETHEL AND CUTHBERT

ORPINGTON, 1916.

PREFACE

THE idea, that Herb Growing is a very profitable industry, which a few years ago was industriously circulated by various newspapers in the United States, and subsequently in this country, has doubtless led, in part, to the enthusiasm with which the subject has been taken up by ladies throughout the country, especially by those previously interested in horticulture.

The knowledge that Germany and Austria formerly supplied this country with many herbs, and the patriotic desire that such should not be the case after the war is over, has no doubt also had its influence. But it was soon found that the information concerning this branch of horticulture and medical botany was scattered, and not always reliable.

In these circumstances the authoress, who has widely travelled and is familiar with the native herbs of more than one country outside England, recognising that the names given to plants in different countries were very confusing, since the same English names are applied in the United States as well as in British Colonies to very different plants, has endeavoured to compile a work that would clear up some of the difficulties attending the naming and recognition of herbs, and would bring together as far as possible any items of practical interest from the various publications issued by Departments of Agriculture in different countries concerning the culture, yield, and profitable marketing, of medicinal plants and herbs.

Botanical terminology and the arrangement of the natural orders vary a good deal in different countries, and, apparently for this reason, Miss Teetgen has chosen the most convenient arrangement of the natural orders—viz. the alphabetical one. An endeavour has also been made

to indicate in what systems of medicine, whether allopathic, homœopathic, eclectic, herbal or otherwise, the different herbs are used, and also to point out the other technical uses in confectionery, liqueur manufactures and perfumery for which some of them are employed.

The difficulty of the task of sifting the literary material available, and of dealing with conflicting statements and retaining only those that appear to be reliable, can only be understood by those who have experienced it.

Having had the privilege of looking through the proof sheets, I may safely assert that the literary skill with which the authoress has dealt with the stores of folklore, old herbals and modern Departmental publications will render this little volume welcome to all who take an interest in the subject, and will make it extremely useful for reference.

It must be understood that the prices quoted are those at which the herbs are sold wholesale, and that at least 25 per cent. or more must be taken off to ascertain the price that the collector is likely to get for the dried herbs, roots, etc., otherwise disappointment will result.

Since experiments are being made in various Continental countries as to the possible improvement of herbs under cultivation, there will no doubt be available for a future edition a great deal more valuable information. And it may be hoped that organisation of the industry on co-operative lines in this country will in the future enable the herb industry to have some right to the term " profitable " which the authoress has applied to it on the title page.

E. M. HOLMES.

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PROFITABLE HERB GROWING AND COLLECTING

PART I

INTRODUCTION

I.—HERB COLLECTING GENERALLY

ABOUT two months after the outbreak of war in 1914 the Board of Agriculture and Fisheries issued broadcast a leaflet (No. 288) on "The Cultivation and Collection of Medicinal Plants in England." The leaflet was a special one, dealing with the war-time aspect of a particular industry, and it was addressed not necessarily to the druggists and herbalists of this country, but to the general agricultural and horticultural public.

It attracted attention. Enquiries began to be made in every direction by individuals whom it interested with a view to finding out something as to the general position of medical plant culture and of the industry of medicinal "weed" collecting in the country, and as to the practicability of acting on some of the Board's suggestions. Experienced gardeners began to demand expert information as to methods of herb culture; people with large gardens began to consider what space they could spare for the raising of medicinal plants, while everybody demanded particulars as to the proper ways of drying and preparing the "weed" harvests for the market. The wholesale growers and importers of herbal drugs were inundated with letters begging for information from all over the country,

and the leaflet gave rise to a great deal of correspondence at the offices of the Board of Agriculture in Whitehall Place.

In the meantime the most useful and authoritative information elicited in response to this flood of enquiry consisted of the articles which appeared from time to time in the pharmaceutical press from the pen of Mr. E. M. Holmes, F.L.S., F.R.H.S., the well-known authority on medicinal plants and Curator of the Pharmaceutical Society. Every avenue of enquiry seemed, indeed, to lead to Mr. Holmes. On April 11th he read a paper on "The Cultivation of Medicinal Plants and the Collection of Herbs in Great Britain" before the Royal Horticultural Society at the request of the Central Committee for National Patriotic Organisations, a reprint of which, extracted from the Journal of the Society (vol. xliii), formed then, together with Mr. Whatmough's pamphlet, No. 288, all the literature as yet available concerning the revival of the herbal industry in England. Messrs. Potter & Clarke's interesting *Cyclopædia of Botanical Drugs and Preparations* is a valuable book, but it is more for the expert or the pharmaceutical student than for the would-be "weed" collector, and is not confined to an enumeration of merely the British vegetable materia medica. Whatever value the present book may have—and the writer has only attempted to put together the sort of information likely to be of interest or use to everyday folk—is due to the fact that she has been courteously allowed to quote freely from the above-mentioned authorities.

"Literature" of Herb Collecting and Growing.

It was not only the expert who was attracted by the idea of raising medicinal herbs. It was not only the owners of country houses and large landowners, the people with those advantages of acres, labour, and capital to command which alone will make for success in this enterprise, who desired to respond to the appeal. Hundreds of small folk all over the country, cottagers, gardeners, women of modest means, began to ask how they could help in supplying the drug market with English-grown plants with advantage to themselves. It was soon perceived that only by some well-organised system of co-operation could their efforts be rescued from disappointment and futility. Accordingly an Association was started with the express object of

organising this widespread interest and of linking up the would-be small growers throughout the country.

Formation of the Herb Growers' Association.

Under the auspices of the Women's Farm and Garden Union, the Herb Growers' Association came into being, and about a year after the appearance of Leaflet No, 288 it issued its first pamphlet and outlined its scheme of work. At present this Association represents perhaps the best response that has been made to the appeal of the Board of Agriculture. It is the only channel through which the small folk can act, and affords those without the advantages of much land or money at command the best means of getting into communication with other workers in the same field, and with the wholesale market.

Its objects—to be outlined as we proceed—are first to organise the newly revived industry, and second, *to act as middleman in all business transactions between the growers or collectors (especially those on a small scale) and the wholesale buyers.* It might be said that they are educational also, in the sense that the Association is prepared to offer help and advice to its members on all points connected with herb growing and marketing. It should be clearly understood, however, that the Association would enlarge its scope indefinitely and overwhelm itself, perhaps, with extraneous work were it to undertake anything like a campaign of information and propagandism. This must be left to the " literature " of the subject, since the activities of the Association are tending rapidly to specialise on facilitating the buying and selling of British-grown herbs between British drug houses and British growers and collectors.

The present book is an attempt to supply some, at least, of the information often sought from the H.G.A.

The names of Mr. Holmes and Professor Greenish on the expert advisory Committee of the Association are a more than sufficient guarantee of the excellence of the guidance and instruction it offers to its herb-growing members in its monthly Leaflet and otherwise.

The moment is a unique one in the history of English medicinal plant culture. It depends upon the efforts being made now by the growers and collectors on the one hand, the English wholesale drug buyers on the other (and this intermediate Association between them), to

rescue the market for our native plants from German enterprise. The industry has been swamped in the past by the import of foreign herbs—so much so that it has not paid our itinerant "weed" collectors to harvest the plants of our own roadsides and fields.

"Since the commencement of the war," said Mr. Holmes, speaking before the Horticultural Society, "considerable interest has been aroused concerning the necessity for cultivating some of the more important medicinal plants on a larger scale than heretofore, since two of the facts that stand out clearly as a result of the war are that there is a shortage of supply, and that we have been hitherto largely dependent on Austria and Germany for medicinal plants and herbs, many of which have been imported at a lower price than they can be grown or collected in Great Britain—so much so, indeed, as to have seriously affected the home industry.

It will perhaps be useful to direct attention to some facts concerning the present position of the cultivation of medicinal plants in this country. It must be distinctly understood that it is only a minor industry, as compared with that of food products, but is nevertheless one of national importance, seeing that it concerns the health of the nation, and the enormous requirements of our sick and wounded sailors and soldiers, as well as of our ordinary hospitals and dispensaries. Why there should be any necessity to import from Austria and Germany plants that grow well in this country is not at first sight obvious. The real reason for their importation is clearly a financial one—viz. the well-known law of commerce to buy in the cheapest market and sell in the dearest. This tendency, together with the neglect of scientific organisation and the absence of a protective tariff, has led to the purchase by this country of cheaper material from abroad. As in many other cases, the public has remained in ignorance of the way in which free trade has injured the home industry."

It is not so much the idea of "capturing trade" which animates the Herb Growers' Association, as the desire to meet a pressing need. The war has profoundly affected the drug market. The industry having so largely lapsed of late years to Germany, Austro-Hungary and the Balkans, and these sources of supply being closed, prices are going

up by leaps and bounds, so that very soon the use of the most important medicines will be possible only to the rich" (Leaflet 288). The prices of common herbs like Yarrow have risen high, and "never before were the prospects of the herb gatherer so good" (Leaflet 288).

The situation, however, is one not lightly to be summed up. The evidence which goes to show exactly what this may be is weighty and responsible evidence, well worth collecting together in a few pages by way of preface to the sketchy enumeration of English marketable "weeds" (where they are to be found, when picked, etc.) which is all the writer would attempt. She is not aware that any general digest of it has been made before.

It is an astounding thing to learn that many of the commonest weeds of our lanes and fields, many of the farmer's sworn foes and the gardener's pet aversions, have valuable medicinal properties and a price in the drug market.

We at once want to know what are these weeds, where this market is, what are the prices that rule in it, and how it is supplied. Every roadside is invested with a new interest, and the coming of spring heralds a cycle of green things and of humble blossom throughout the prolific year which had hitherto escaped our notice.

The following pages are an attempt to answer these questions, and to rescue these plants from their obscurity. They are not, however, primarily addressed to those who merely see in the information they may afford an opportunity to make some war-time money. Little but disappointment would attend sporadic and amateur attempts either to cultivate or to collect the pharmacopœial plants. Some horticultural experience is a necessity in the first instance, and in the second some sort of organisation or locally concerted effort would be necessary to make the simple collecting of weeds in commercial bulk a profitable matter. The Herb Growing Association have understood this. Their idea is to instruct cottagers how to make the best use of their gardens through the formation of classes and clubs in villages.

The following notes are therefore addressed to those who were interested in the Leaflet of the Board of Agriculture, and especially to those thoughtful people in the country to whom the economic aspect of the question

appeals as a patriotic one—to those who would rescue an essentially home market and industry from German competition. If this is not accomplished now, when peace is declared the trade in our own weeds may flow back again into its old channels, and German and Austrian peasants will reap profits which ought to be going into the pockets of our own rural folk.

Apropos of the objection which may be raised that the "well-known law of commerce to buy in the cheapest market" may reassert itself after the war and compel drug buyers to deal again in German imports, to the destruction of any revived herbal industry in England, it may be said that one of the objects of the Herb Growers' Association is to obtain the support of the wholesale drug firms for the English grower. This can only be accomplished if the home-grown herbs are raised and dried and baled in first-class style. "Imported medicinal plants," says Mr. Holmes, "are in nine cases out of ten of inferior quality, and sometimes mixed with dangerous herbs."

"As there are about twenty-four wild varieties of *Aconitum napellus*, and all are not known to be equally active, and the roots are gathered indiscriminately so long as the plants have a blue flower, it is obvious that roots obtained from a definite cultivated variety are better than those of wild plants. But the use of the cheaper German root, which is almost always of a mixed character, has led, in the case of this very powerful and most valuable medicine, to its cultivation in this country having practically ceased, and to the medicinal preparations of the plant falling almost into disuse, through unreliability of therapeutical action, due to their variation in strength, having being derived from different species of Aconite in Germany. As the genuine Aconite root no longer pays for cultivation in this country, being undersold by German and Japanese roots, it has become unobtainable, and the Pharmacopœia has consequently been compelled not to restrict, in the present edition, the medicinal root to plants cultivated in Britain, as it did in the previous edition of 1898. A protective tariff would have prevented this undignified and undesirable position."

There are various places and districts in England where the cultivation of medicinal plants has long been made an extensive and expert industry, and entire crops are

raised of lavender, caraway, dill, flax, rhubarb, rosemary, chamomile, liquorice, rue and roses, to say nothing of the usual "herbs" which find a place in every kitchen garden—sage, thyme, mint, pennyroyal, marjoram, tarragon and parsley. There are various important drugs like aconite, belladonna, henbane, thornapple, valerian, which require land and capital, time and knowledge for their successful cultivation: all this culture is at present in the hands of a few medicinal plant growers, who are well aware of the enhanced value and possibilities of what has hitherto been their monopoly. Few individuals are in any position to compete with them, and they guard the secrets of their experience somewhat closely. There are, again, large medicinal plant farms in various parts of the country, like that established at Dartford in connection with the firm of Messrs. Burroughs & Wellcome, where the cultivation of exact medicinal strains is aimed at in order to standardise the resulting galenical preparations as far as possible in the present state of pharmaceutical and botanical knowledge and experience. An interesting article appeared in *The Chemist and Druggist* for January 29th, 1910, describing an ideal materia medica farm.

Materia Medica Farms.

"A suitable piece of land for a 'physicke garden' [had been chosen near the Wellcome Chemical Works at Dartford], on an undulating slope, with here and there a clump of trees and a strip of wild woodland, between the river and the North Downs, hard by the little village of Darenth. No more ideal spot for a herb farm could have been chosen. It has shade, sunshine and moisture, and a fine loamy soil varied by sandier uplands. Here the firm have for the last [twelve] years been cultivating medicinal plants under the immediate superintendence of pharmaceutical and botanical experts. The farm was established firstly to provide opportunities and materials for research and experiment, and secondly to supply the manufacturing departments with medicinal herbs of proper quality. A visit to the farm shows that the greater part is devoted to the cultivation of staples, but a number of plots are used for experimental crops. Among such are Meadow Saffron . . . Lavender, Peppermint and French Roses grow side by side. Senega and the unpretentious Taraxacum (Dandelion) occupy other spaces. Ginseng . . . is also

grown, . . . the plots of *Hydrastis canadensis* are botanically and commercially the most interesting on the farm, in view of the fact that we are coming within measureable distance of the end of the natural supply from North America."

There are other large farms of this description at Mitcham, Carshalton, Hitchin, Ampthill, Long Melford, Steppingley, Market Deeping and Wisbech, managed in connection with large pharmaceutical manufactories. There is a herb-growing school and nursery at Chalfont St. Peter. But so far as the writer knows, the ambition of the Herb Growers' Association to organise and develop a farm as a source of national supply of home-grown drugs is unique.*

* The writer has recently had sent to her about twenty specimens of North American plants as they are grown, dried and prepared for the market on the materia medica farms of the United States. Many of these—such as Lobelia and *Podophyllum peltatum*, could be grown in England, although they could not be sold so cheaply as the transatlantic wild product. The following could be supplied by a grower over here to stock a herb garden, if desired :

Black Cobosh (*Cimicifuga racemosa*). *Cassia Marylandica.*
Mandrake (*Podophyllum peltatum*). Boneset (*Eupatorium perfoliatum*).
Blood root (*Sanguinaria Canadensis*).
Button Snakeroot (*Liatris spicata*), etc.

The lists of the herbalists enumerate some thirty species of American plants, one of the most important of which, Golden Seal (*Hydrastis Canadensis*), is particularly difficult to cultivate.

The herb collecting industry is conducted on so well-organised a scale in Germany that she has hitherto done a large export trade in vegetable drugs, not only with this country, but with America. The States import annually some thousands of pounds weight of "weed" roots, herbs and seeds. One of the hopes of those who would like to see the industry revived and placed on a good businesslike footing in England is that in time she might be able not only to supply the home market with good unadulterated drugs, but to build up an export trade similar to that hitherto secured by Germany. With comparatively few exceptions, the medicinal plants of America are not indigenous to that country, but are of Old-World origin. In some parts, however, some herbs, like Horehound and Mustard in California, grow so abundantly as to assume the proportions of agricultural pests. Yet the industry of herb collection is not more organised in the States than it has been up to quite recently in England. Since August 1914 attention has begun to be turned to the subject there for the same reasons as at home—*i.e.* as a means of guaranteeing the future supply of crude drugs, of lessening the dependence upon importations, and of saving the large sums of money expended abroad. The United States Department of Agriculture has issued (among many others) a couple of farmers' bulletins on "Weeds used in Medicine" (No. 188) and on "Drug

II.—HERBS IN THE VARIOUS SYSTEMS OF MEDICINE, AND THE HERBALISTS ANCIENT AND MODERN

THE subject of English medicinal herbs is a large one, with an extensive scientific library of its own.

An immense number of plants are used in medicine,

Plants under Cultivation " (No. 663), which form some of the best " literature " on the subject as yet to be procured. They may be obtained free of charge upon application to the Secretary of Agriculture at Washington, and although written for the would-be American collector and grower, contain many facts of interest from an *economic* as well as from an agricultural point of view, for the English cultivator. The same may be said of the excellent, bulletin on " Medicinal Plants and their Cultivation in Canada," issued recently (No. 23 Second Series) by the Botanical Division of the Canadian Department of Agriculture, and to be obtained from the Government Printing Bureau at Ottawa.

The American pamphlets are marked by a spirit of very sober caution. Miss Alice Henkel, the expert author of many of the official pamphlets issued by the U.S.A. Bureau of Plant Industry, remarks (Bulletin 188) that while many of the " weeds " mentioned in the herbalists' lists " can hardly be made desirable, still in his fight to exterminate them the farmer may be able to turn some of them to account." This applies most aptly to many of our English weeds, like Couch Grass and Yarrow.

The second of the two topical American bulletins is No. 663, by Dr. W. W. Stockberger, on the cultivation of drug plants. There are in the States some fine experimental drug farms, like that at Glenolden belonging to the H. K. Mulford Co., and at Malden, Mass., but in many cases, like that of Henbane, no data on the native yield are available, and the drugs are largely imported. Dr. Stockberger, physiologist in charge of the drug plant and poisonous plant investigations of the U.S.A. Department of Agriculture, remarks that " the plants mentioned in the following pages (*i.e.* of Bulletin 663) were selected for discussion because information regarding their cultivation is in constant demand." He is careful to insist that " The purpose of this Bulletin is not to recommend these plants for cultivation " [in preference to ordinary farm or market garden produce], " but to give information concerning their culture which may be helpful to persons who are considering the production of drug plants on a commercial scale." Some of these, he says elsewhere, if not well suited for cultivation on an acreage basis, *may be found profitable when grown on small areas as a side line.* Dr. Stockberger's list enumerates fifty-eight plants, of which at least fifteen would not concern the would-be English grower. We have, however, in the following pages, availed ourselves of some of the directions issued for the culture of herbs other than those mentioned in the pamphlet of our own Board of Agriculture in about six instances.

many of which if not already grown in England have at one time or another been successfully cultivated in this country, or are capable of being grown here. The vast majority of these come under the heading of "weeds." Only a certain proportion of these plants are what are called "official," *i.e.* enter officially into the galenical preparations of the British Pharmacopœia.

Of the market for the official plants there need never be any question, though that for the non-official is subject to greater fluctuations. It may be noted, however, that many plants non-official in the B. P. are official in the Pharmacopœias of other countries—notably in that of the United States—while many ignored altogether by the B. P. and the system of therapeutics it represents, are used in Homœopathy, in veterinary work, and by herbalists.

Note on American Herbs.

The *British Pharmacopœia* is published under the direction of the General Council of Medical Education and Registration of the United Kingdom, but a larger and far more comprehensive tome, *The British Pharmaceutical Codex* (B.P.C.), is published under the auspices of the Pharmaceutical Society of Great Britain. In this latter volume not only the official plants find a place, but a long list of vegetable materia medica of equal importance in pharmacy, which for one reason or another do not figure, or have ceased to figure, in the *B. P.* itself. The market for these also should be an assured one. The preparations of the B. P. enumerate a rather restricted list. Some of these plants are either indigenous to this country, or have been introduced here in haphazard * ways at various periods with such success that few people suspect their foreign origin.

The "B.P." and "B.P.C."

* Hitherto the most important agent of plant introduction has been the import from foreign countries of the kinds of grain most used for making flour (corn has been imported since the fourteenth century) and for distilleries. In every sack countless seeds of the cornfield weeds of the country of origin come mixed with the grain. They are sifted out and thrown away in waste places, where they germinate, or they are sold to feed poultry.

Again, the extensive use of foreign seeds for feeding caged birds is responsible for many vegetable immigrants, while many of our commonest aliens have arrived in this country in bales of raw wool, and in merchandise, like raw hides, of every variety. At the present day in Western Canada it is often possible to track and name a party of foreign immigrants across the prairie by the stranger

Non-Official Plants. Botanic Pharmacopœia, Homœopathic Pharmacopœia.

The names of the non-official plants, even those outside the B.P.C., British and otherwise, are legion. They play almost as important a part in medicine as the official ones and the plants of the Codex. Some of them are immensely despised or utterly ignored by those in the higher ranks or more responsible positions of the orthodox medical world, but for all that they are much used. The people want these non-official things, and the Herbalists sell and prescribe them. There is an interesting compilation called the *National Botanic Pharmacopœia*, published by the National Association of Medical Herbalists of Great Britain, Ltd., which shows how such common plants as agrimony, chickweed, mugwort, mouse-ear, horehound, dock and brooklime are still used, compounded, and esteemed in this particular system of medicine.

Even in these days of the Insurance Act the Herbalists flourish, especially in the country districts of the north, and many consult them and prefer their treatment to that of the registered medical man.

It is this large unrecognised herbalist practice which furnishes his best market for the herb collector, and whither most of his wares are bound. The would-be herb-gatherer would therefore be well advised to make his or her list of plants a comprehensive one, including official, non-official, homœopathic, veterinary and herbal drugs, since from a business point of view some pay much better than others, and thus there would be no object in making a speciality of one series rather than of another.

Some people are inclined to raise objections to the cultivation or collection of plants used merely in herbalist practice. They think that herbalism is a quack or empirical system of medicine unworthy of support or perpetuation. They believe it to be a mere tissue of "old wives' lore" and superstition. They are not aware, perhaps, that modern pharmaceutical research has vindicated the reputation of many an olden "simple," has

plants that have sprung up along the trail. An Albertan botanist told the writer some years ago that the native flora of the west was being immensely augmented by these naturalised alien plants from year to year. The same process has largely been responsible for the compilation of our present flora.

winnowed herbalism of its ignorant elements, and raised the practice of herbal pharmacy to a scientific level. The herbalism of to-day is the modern representative of the time-honoured old-fashioned use of herbs and "simples" in which our grandmothers were skilled. It represents an age-long accumulation of homely rural domestic knowledge, which unfortunately has lapsed among Englishwomen as it has not been allowed to lapse by the housewives of France and Italy and other Continental nations. Moreover, since these non-official medicinal plants, equally with the official ones, are recommended to the attention of the grower and collector by the Board of Agriculture and the Herb Growers' Association, and since certain wholesale drug firms are prepared to purchase large supplies of them, it is drawing an arbitrary line where there need be none, to take exception to the raising of herbalist plants.

It is not suggested that any one collector, or group of collectors, should attempt to harvest all the herbs to be enumerated and described in these pages, for it will seldom happen that any great number of them abound in any one neighbourhood. Perhaps only four or five may be worth the trouble of collecting in any given place—perhaps only one. The suggestion is that no matter to what medicinal category such and such a herb may belong, if it only grows abundantly enough it is worth harvesting in its proper season. The official formularies of the preparations used in the perfumery and toilet trades, again, enumerate plants not employed elsewhere, but which might profitably engage the herb grower's attention.

Apropos of these modern "Herbalists" it may be recalled that "herbalists" * flourished throughout the sixteenth century and onwards, and that no English work on herbs and medicinal plants is met with prior to this age.

The Elizabethan botanist Gerard had his garden in Holborn; that of Oxford was founded by the Earl of Danby in 1632. During the reigns of Edward VI and Mary, Dr. William Bulleyne lived and wrote the first "*Boke of Simples*"; while the famous Culpepper published his

* The name "herbalist," it should be pointed out, was not always used in its present restricted sense. "Herbs" were plants in general, and "the King's Herbalist" meant what we should now call the "Curator" of the royal garden.

"*Compleat Method whereby a Man may cure himself being sick . . . with such things as grow only in England,*" in 1652.

Coming down to nearly modern times, we find the "green men" of the early part of the nineteenth century wandering all over England in quest of curative herbs, carrying their apparatus for distilling essences and preparing extracts. This is the meaning of the sign which still hangs out over some of our countryside taverns, "The Green Man and Still." The itinerant herb collector who gathers roots, etc., to-day for the agents of the big drug houses and manufacturing chemists is his direct descendant. The writer was told recently that the war has greatly thinned his ranks.

Few people except the Society of Apothecaries, the wholesale herb dealers, and their own particular clients, seem to know much about present-day herbalists. There is, however, a National Association of Medical Herbalists in this country, from whose Year Book information as to its scope and aims can be obtained. The body is a small one. It has not made a successful fight for legal recognition, as have the herbalists of France and the United States. In fact the botanical practitioner has no recognised standing in this country at all, and it is penal for him to "act as an apothecary." While there is nothing in the National Insurance Acts to prevent an insured person obtaining the services of a qualified herbalist, "unfortunately," writes Mr. Joseph Whatmore,* "no authoritative statement has been made as to what constitutes a qualified herbalist, or what are the qualifications necessary to assume the title. . . ."

It would seem that this Association aspires to the inauguration of a herbal hospital both as a training school for botanical practitioners and as the most practical way by which to demonstrate the claims of modern herbalism to the public.

All this, of course, has its own interest for the herb cultivator or weed collector. The *Botanical Pharmacopœia* already mentioned is a most instructive little book, and is practically an attempt to put on a scientific and modern basis the best traditions and most time-honoured remedies of the old herbal lore of the country. For the "rustic

* *Herbalists' Year Book*, 1915.

medicine " of the past has been coming into its own again on an entirely new footing owing to the analytical researches of the modern chemist.

Up to within the last half-century, Dr. Fernie * tells us, herbal physic was a merely empirical art, and its curative methods were those of a blind experimental science. Now, however, " our herbal simples are fairly entitled to promotion from the shelves of the amateur still room, from the ventures of the village grandam,† and from the shallow practices of self-styled botanical doctors in the back streets of our cities."

So modern an authority as Sir J. Sawyer writes that he would not have recourse to narcotic drugs in the treatment of sleeplessness before he had exhausted the homely expedients of the " old wives " and tried the " Pulvinar lupuli " or hop pillow. He believes in the lore of all the old popular remedies, such as tar water, clove tea, nutmeg and lime tea, and cowslip wine ; for modern science has explained and confirmed the value of such remedies in every case where it has not exploded a mere superstition.

In " olden days," ‡ for instance, the herb Rue used to be brought into Court to protect the Judge and Bench from the contagion of gaol fever, and it was probably quite effective, though nobody knew why. Recent research has shown that the essential oil contained in Rue, as in other aromatic herbs like elecampane, rosemary and cinnamon, serves by its germicidal principles to extinguish bacterial life. Nobody knew much about bacteria in the time of Elizabeth Fry, nor was much known about the alkaloids contained in plant tissues prior to the dis-

* *Herbal Simples*, by W. T. Fernie, M.D.

† A soldier back from the front gave in *The Nineteenth Century* a description of his quarters in a northern town somewhere in France. His landlady had a " domestic pharmacy in which the herbs of the field had been distilled by Madame's own hands to yield their peculiar virtues, Rue for liver, Calamint for cholera, Plantain for the kidneys, Fennel for indigestion, Elderberry for sore throat, and Dandelion for affections of the blood." My only doubt," wrote the Paris correspondent of the *Chemist and Druggist*, commenting on this article (Jan. 1st, 1916), " is whether the list is anything like complete, omitting as it does a dozen more plants which many careful Parisian housewives regularly stock in view of minor ailments."

‡ A mixture of other herbs is still used in the Law Courts.

covery of "opium salt" (morphine) by Derosne in 1803. Yet Rue had been disinfecting stuffy court-rooms, and poppies had been acting as soporifics long before the action of either came to be explained.

"Simples" have been cultivated in England since primitive British times. The original simplers and herbalists were guided in their selection of herbs partly by watching animals who sought them out by instinct for self-cure, and partly by experiment. When the Saxons came, they found Rue, Hyssop, Fennel, Mustard, Elecampane, Onion, Lupin, Chervil, Lovage, Coriander and a score more herbs as a legacy from the Roman period of agriculture, and throughout the middle ages every convent had its physic garden. It is to the careful "leechcraft" of the monastic orders that we owe our knowledge of many of the medicinal properties of these things. Their supposed relationship to certain diseases which Nature "meant" them to cure led to the curious jumble of ideas and inversion of theories known as the "Doctrine of Signatures." Unlike the North American Indian, civilised man has lost a number of valuable instincts, such as how to find his way at night, and the poisonous or remedial properties of herbs. It was left to the "simplers" of monkish times to rediscover such things, and to chronicle them, mixed up with much amazing astrology, according to the enlightenment of the time.

The principles of Homœopathy of the present day are responsible to a large extent for the scientific revival of the herbal remedy. To the botanist as to the pharmacist the study of the Homœopathic Pharmacopœia is as interesting as that of the *B. P.*

That quaint little plant the Sundew (*Drosera rotundifolia*) is "official" in Homœopathy, since it has been "well demonstrated" that at the onset of pulmonary consumption in the human subject a cure may nearly always be brought about by giving a tincture of this plant, which causes healthy persons taking it to become hoarse of voice and troubled with severe cough. It has been found that when taken experimentally by healthy "provers" many of these homœopathic remedies will produce symptoms similar to those of definite recognised maladies, and the same herbs if administered curatively in doses sufficiently small to avoid producing their toxical

effects, will restore the patient to health. Sundew is chiefly used in whooping-cough.

This, of course, is Homœopathy in a nutshell, and the homœopathic use of such herbs as buttercup, wild pansy, watercress, elder and parsley illustrate it. The cures thus effected are called "homologous cures," and are paralleled, perhaps, in allopathic work by the whole theory and practice of vaccines and serum therapy.

Interesting, however, as the history of herbalism may be, and as many may find the revival of the "old-wives' remedies," with the implied domestic dispensing of the old-fashioned still-room, the object of the following pages is not to enlarge upon either, but to offer some assistance to the would-be herb collector whose wish is to furnish the drug market, allopathic, homœopathic or herbalist, with English-grown plants.

III.—WEED COLLECTING

THE subject of medicinal herbs divides itself into two parts, or rather the question of "weed" collecting pure and simple develops by natural transition into that of gardening or expert herb culture, and from this again to that of herb farming on an extensive scale.

Again the industry is attracting the interest not only of the professional horticulturist but of people who have hitherto paid little attention to plant life, and who know nothing of botany. In order, however, to become a herb collector some acquaintance with the science is necessary and some familiarity with its terminology. The collector must be able to identify plants and distinguish their various species. The Genus Senecio of the Composite Order, for instance, abounds in groundsels—although only *Senecio vulgaris* is actually so called—but the collector is required to recognise the one or two species (and distinguish them from a host of relations) used by the herbalists.

Some explanation must be offered here for the use of the scientific names of plants in the following pages.

The extraordinary and confusing variety of common names * attaching in different parts of the country to

* If the reader should have any interest in the popular names of our English plants he should consult the *Dictionary of English Plant Names*, a most comprehensive work by Robert Holland and James Britten.

the same wayside growth makes the botanical name its only standard of identity. The old countryside ways of calling flowers are very sweet (often homely), very English, redolent of Chaucer and Shakespeare, but they are no guide for the would-be "green man." If, however, a hedgerow blossom can be exactly identified once and for all by means of the description of it to be found in the manuals of botany, there can be no longer any doubt as to what it really *is*, despite a score of rustic names. Such a description, enumerating bracts, sepals, stamens, etc., worded in the language peculiar to botanists, is a surer guide to identity than flower drawing or photograph. The "characters" which taken collectively distinguish one species of a genus from another are as a rule taken from all parts of the plant, stem, leaves, flower, fruit, etc., so that it is often impossible to identify a herb from one of them alone, without reference to the rest. The only means of arriving at certainty on such a point—short of submitting specimens for identification to an expert—is the comparison of fresh-picked herbs about which doubt is entertained with the named exhibits in an herbarium.

Popular Names of Plants.

There is a certain method of preserving plants which retains the "habit" of the growth intact, of which some exquisite examples are to be seen in the Botanical Gallery at the Natural History Museum, South Kensington. The study of such exhibits as these is a great aid to plant recognition in situ. The collection of pressed specimens of English wild plants in this Gallery is arranged in illustration of Bentham & Hooker's *British Flora*,* a handy botanical classic; a knowledge of how to consult this, and how to use it in connection with this exhibition, should suffice to teach anybody enough about English weeds to enable them to become intelligent herb collectors. The pursuit

How to Identify Plants.

* Many people know a large number of plants by sight without knowing their names. For these Messrs. Gowan's sixpenny books of flower photographs (there are three series, each comprising about sixty plants) may be helpful.

Another excellent popular but scientific book on the English flora which might help the herb collector's education is *Flowers of the Field*, by the Rev. C. A. Johns. The latest edition, edited by Professor G. S. Boulger, is illustrated by coloured drawings from nature.

is an eminently practical introduction to botany, and should greatly commend itself to educationists.

Quite the best and the most instructive way of acquiring an open-air knowledge of medicinal (and economic) herbs is to frequent the physic gardens of London and elsewhere,* and encounter there the nameless little things of the hedgerow each set out in its own plot of ground with its distinctive label. The herbaceous ground at Kew affords an education to the herbalist. The gardens there and at Regent's Park are open to the general public on payment of a small entrance fee; the Chelsea Physic Garden, a modest three acres set in the heart of an old-world part of London is exclusively reserved for the use of students, and for the purposes of botanical study, so that tickets of admission have to be obtained from the right quarter. Information about this should be sought from the Curator of the garden.†

Herb Gardens.

Sir Hans Sloane (1660–1753), an Irish doctor and naturalist, was Court physician to Queen Anne and the first two Georges, and the air of that period still invests his "physick garden." An old Georgian gate in Swan Walk, with its two pillars of mellow brickwork, its formidable rouleaux of spikes above, and a shallow flight of worn stone steps leads down into the Garden, and the Founder himself stands there for ever in the midst of its decorous rectangular ways to greet you. His wig, his foppish coat of the period, and the neatly turned calves of the complacent legs have something of a Chesterfield air, while a pinch of snuff must surely have served now and then for the display of the fine lace at his wrists.

The old reservoirs of his day, lead and copper tanks, with fine patterning upon them, are still in use. The grey clouds of a London sky drift over against a subdued background of rose and amber towards the river, much as they did a hundred odd years ago; but the botanist who planned that Garden, saw to the planting of the ilex and mulberry, and set the physic plants in its beds and borders, could hardly have foreseen that in years to come they would have to contend with the soot-laden atmosphere

* Oxford, Edinburgh, Cambridge.

† Tickets of admission (no fee is charged) can be obtained from Mr. E. R. Warre, 3 Temple Gardens, E.C.

of such a city as "the town" has become, and struggle against the handicap of a very poor record of sunshine in the year.

After some such course of introduction to the botany of this country as that suggested in the few preceding paragraphs, the would-be weed gatherer may start on her quest.

How to Collect.

Wild herbs must be collected properly, in bulk, and not in a way which might lead to their rapid extermination through the appearance of a lot of irresponsible trespassers. If "forays" or groups of collectors care to form themselves in this, that or the other locality where this, that or the other plant happens to abound, and obtain permission from whatever may be the right quarter locally—squire or farmer—to invade the fields or grounds, undertaking not only to harvest the herb in question, but to leave a sufficiency of it for seeding, the wholesale drug-buying houses would not be unwilling to get into touch with them, or their central representative, on a business footing, and offer them a market. Dandelion, twitch grass (stacks of it are burnt on the Hampshire hills!), burdock, marshmallow, comfrey, eyebright, all have a monetary value if they are properly gathered, baled, and delivered in reasonable quantities. There is a better market for them now than there has been for a long time prior to the outbreak of war. Hitherto the drug houses have only cared to deal with large wholesale quantities, but now they will take whatever is being reasonably offered, especially of the rarer or more valuable drugs.

Prices.

It would be quite impracticable to give any idea offhand of what may be the value of any particular herb at any particular moment. The drug market is subject to just the same fluctuations as are other markets, and to the same vagaries of fashion. The price a plant may be commanding will depend upon the demand for it at the moment and the bulk and condition of the goods offered. The price of the finished article—of the drug as sold by the wholesale to the retail trade—may be ascertained from time to time by consulting the druggists' price-lists. *These quotations, of course, are not the prices obtained by the collector or grower who delivers the crude article.* A comparison of them does not serve

to give an idea of the relative values of the herbs, as might be supposed, since those commanding the higher prices are but little used, and only small quantities are stocked. There is, moreover, no standardisation of prices in the drug trade. One dealer will offer twice as much, or half as much, for the same article as another. The only advice which can be offered to the grower or harvester on this head is to ascertain direct from the drug house with which he proposes to do business (or from the H.G.A.) what may be the current prices offered for the herb or herbs in question. In the case of a crop contracted for, the price should be for half of it at the rates obtaining at the time the contract was made, and the other half at those obtaining at the date of delivery.

The writer knows of two young ladies who harvested and successfully disposed of the following " weeds " during last summer :

Stinking Goosefoot.	Clivers.	Eyebright.
Broom.	Comfrey.	Gentian.
Centaury.	Southernwood.	Marsh-mallow.
Mullein.	Parsley Piert.	Raspberry.

Individual effort in the pursuit of weed collecting rather than co-operative work would probably lead to nothing. The aim of the Herb Growers' Association is to organise herb collecting quite as much as to stimulate herb growing.

The writer went recently for advice as to how to find a market for these collections (supposing this is not sought through the Association) to a well-known firm of Homœopathic Chemists, and was given a list of their drugs and preparations and informed that were she in a position to offer any reasonable quantity of any of the herbs in that list—*Aconitum napellus*, *Bryonia alba*, German Chamomile, Bittersweet, Calendula, Saffron, etc., there would be a sale for them on the spot. In another office she was told that there would be an immediate sale for any substantial quantity of such things as Yarrow, Mullein, Coltsfoot, Feverfew, Celandine, etc. Each firm, of course, states only the herbs it happens to require.

As has been already remarked, many of those common plants we are accustomed to look upon as " weeds " have an economic use as well as a herbalist value, and a market

may be found for them with the perfumer, the confectioner and the tobacconist. Elecampane and Wormwood are used by distillers as well as by chemists, while seedsmen will buy Caraway and Sunflower. Thirty or forty years ago Alder Buckthorn bark (a well-known aperient in medical practice) was largely used, and the wood is still used and wanted in the manufacture of gunpowder.

Economic Market for Herbs.

Finally the collector should join a working group of pickers, or proceed to organise such a group, in order to get the work done on a proper scale and as expeditiously as possible. The Herb Growers' Association issues to every one of its members a monthly leaflet drawing their attention to the plants in season and in request, in order that the right harvests may be gathered at the right times. The Leaflet for May asked for collections of Agrimony leaves, Burdock root, Clivers, Sweet Woodruff, Coltsfoot, Ground Ivy, and the roots of Black Bryony, Couch Grass, Comfrey, Sweet Flag, and Valerian. For those engaged on cultivating herbs as distinguished from merely collecting them, the Leaflet offers, month by month, appropriate instructions.

It is because the herb industry in Germany has been so "thoroughly organised" that it has captured the drug market.

"So far as I can learn," said Mr. Holmes in his address, "German children are taught to recognise and collect all medicinal herbs that grow near their homes, and these are dried in small quantities in sheds or attics, and probably finished off in farmhouse bread ovens after the removal of the bread. A collector or middleman calls round and buys up the small parcels, and forms them into bales to be forwarded to the wholesale herbalist; and with three profits to be taken, *i.e.* by the gatherers, middlemen, and wholesale herbalists, the herbs can still be sent to this country cheaper than a working man can collect them here. Yet I saw last year, on one waste hilly field near Sevenoaks, enough Centaury, Purging Flax, St. John's Wort, and other herbs to yield several hundredweight, and in another field close by enough Wild Carrot to supply a wholesale herbalist for a twelvemonth. There was even an oasthouse for drying hops close by, which is only used in September, and could be available during other months. It seems absurd to import Coltsfoot by the ton, when every clayey

railway bank, or heavy waste ground, is covered with the plant. The means of drying these, if provided by local authorities or wealthy landowners at small cost, would help the industry to overcome competition. If children of farm labourers were taught to collect them, it would encourage industrious habits in them, give them a healthy occupation on holidays, keep them out of mischief, and add a little to the scanty wages of their parents."

Wherever this question of reviving the herb industry is being discussed, thoughtful people are urging that it should be brought to the notice of the local educational authorities, and that the children of the English peasantry should receive practical "botanical" instruction of this sort at the hands of their teachers. . . .

"Last year," Mr. Holmes continued, "English Melilot and Woodruff were not procurable, and this year even the largest wholesale herbalists could not supply even a few pounds of Agrimony, which is quite a common English herb, and is one of the herbs used in making the botanic beer. This scarcity is due to the fact that the thorough organisation of the herb industry which prevails in Germany does not exist in this country. The way in which landowners could help, together with the local authorities, would be by inducing the farmers to let their labourers' children learn, from the local teacher of botany, to recognise all the herbs that grow in their neighbourhood, and to induce the local authorities to arrange for the economic use of the waste heat of refuse furnaces, lime-kilns and malt-houses and brick-kilns to heat drying-rooms that might be built near by. Means for doing this could be easily devised, without danger from the carbonic acid or carbonic oxide formed by the fires, on the principle adopted in the old Roman villas."

Collector's Outfit.

The collector's outfit consists of some old sacks, and a "paddle"—a strong iron spud 10 inches long, with a cross foot-piece and a tough 4-foot ash handle. For digging such deep-seated roots (corms) as Colchicum, which not only go very far down in the soil but often go down crooked, a bulb planter is a handy if rather expensive (10s.) tool. If children*

* The collection of poisonous herbs such as Belladonna, Henbane, Woody Nightshade, etc., should never be assigned to children; adults should take care in gathering these things that they have no cuts, pricks or abrasions on the fingers.

are employed in making a collection of roots, they should be instructed how to lift them with as little injury as possible. Broken or mutilated roots are not wanted.

The result of the " green man's " day's work has hitherto been taken to a middleman for forwarding to the manufacturer, but a better plan than this is now for parties of herb pickers to consign their entire pick day by day to some central place in the neighbourhood, where it can be properly and expeditiously dried. There must be co-operation, and a central depôt or a collector travelling round to gather up the material, if it is to be checked and properly packed for wholesale purchase. When fresh herbs are being sent by rail or carrier they must go in ventilated cases, to prevent heating and consequent deterioration and possible ruin. Herbs like Digitalis and Belladonna should be laid out to dry on the *same day* as they are picked wherever possible (or sent to the drying depôt at once), or the crop will probably be lost. Disused banana crates would be suitable to transport them in, or any crate with sides composed of strips of wood allowing for free ventilation. *They should not be packed in closed boxes of any sort.* A lining of cheap thin canvas should be used to prevent the leaves, etc., working through the openings in the crates. When large quantities are sent, arrangements must be made with the railway authorities to take them in cattle trucks with open sides and covered roof. Only with such precautions can consignments of fresh herbs travel without deteriorating.

How to Pack Herbs.

When dried, all kinds of herbs must be stored in *air-tight* packages, biscuit tins, or vessels.

Herbs dried locally, *i.e.* by the collectors, should be consigned to the warehouse in London, or elsewhere, in sacks or boxes. The former (clearly marked with the name and address of the consignee for return), suffice for the transport of wholesale quantities of Clivers, Yarrow, etc.; but leaves like those of Belladonna, Foxglove, etc., should be carefully packed in layers in boxes as air-tight as possible. As the freight, however, of wooden or tin boxes is usually out of proportion to the value of their contents, capacious cardboard dress-boxes could be used for this purpose. *Samples of the proposed consignment should always be submitted beforehand* (to the Association

or dealer) *and some estimate offered of the quantity of herb for disposal.*

Collecting should be undertaken in dry or sunny weather, and never before the dew is off the herbage, or on wet days. Easterly winds assist matters, as "the dry air causes rapid withering and facilitates the process of drying."

How to Treat the various parts of Herbs required by the Druggists—Roots, Barks, Leaves, Flowers, Seeds.

ROOTS should be gathered in spring or autumn. Those of annual herbs should be dug before flowering; those of perennials in the autumn and not until the plant is two or three seasons old. "Roots are most active," says Mr. Holmes, "when the new root is fully formed, before the plant is developed, as in Aconite; or in the case of some perennials like Dandelion, in the spring before the flowers are formed. To some extent the collection of roots is ruled by other circumstances, such as the convenience of the farmer, as they are more easily and conveniently collected when the land is ploughed, or when the crops which permit it, such as turnips, are weeded." Roots should be washed, carefully sliced (if large), and dried. Experience alone will show at what temperature this process should be carried out for the various roots submitted to it. Some of these require to be decorticated. In other cases the drug consists of the *root-bark* itself, in distinction either to the root, or the bark of the stems and twigs. There is a special "technique"—if one may use the word in this connection—with the drying of each particular crop. Colchicum roots are treated differently, for instance, to those of Valerian. A "rhizome," in distinction to a root, is a running underground stem (as in Couch) from which the roots proper spring: and a "corm" (like Colchicum) is not a bulb, but an underground swelling of the stem. Bulbs should never be lifted until all the leaves have died down and the plant's activity for the year is finished.

Roots may be dried in a few days in artificial heat at temperatures ranging between 125° F. and 150° F. Some of them might take as long as three weeks to dry in natural heat. The proper point of dryness is indicated when the roots break crisply on being bent.

BARKS should be gathered in the autumn. The barks of stems, as of roots, are taken when they come most

readily from the wood, usually in the spring. Druggists' lists enumerate some forty sorts of barks from English trees and shrubs.

With regard to the shrubs and trees which are used medicinally, considering the number of years that would pass before they yielded any return, it is unlikely that their cultivation on land suited for farm crops would be worth while. In the case, however, where a farmer has a few acres of rough stony land it might be advisable to plant it with some of the trees (and bushes) whose products are used in medicine, since they would need but little attention after the first few years, and would probably pay for their room eventually as timber.

In collecting bark it is as well to remember that as that part of the tree or branch above the peeled region will die, the simplest method is to cut down the whole tree or saw off a limb, and the process of stripping can then be done under cover. In the case of the coarser barks (as Elm, Hemlock, Spruce, Poplar, Oak, Pine, etc.) the outer layer must be shaved off or " rossed," since only the inner bark is required.

LEAVES are gathered when the flowers are beginning to open, " because it is supposed that the active principles of the plant are then most abundant in the leaves, before migrating to the flowers, the active principle serving apparently as a protection against insects, and thus moving on from root to stem, leaf, flower and seed, as each organ is successively developed " (Mr. Holmes). Only unblemished leaves should be picked: those becoming discoloured or eaten by slugs or insects should be rejected.

FLOWERS generally are to be gathered just before they are fully opened. They easily lose their colour if they are left to lie in heaps before drying. Flowers like Mullein, which come on irregularly, should be gathered from day to day as they open, without removing the spike. They should be spread at once in thin layers on shallow trays to dry. Each herbal crop requires some treatment peculiar to itself, and nothing illustrates this better than the instructions given for the drying of flowers. Elder blossoms should be collected when they are near maturity, as only the corollas are used, which then easily drop. They should not be allowed to heat, as they readily discolour. Lavender flowers should be dried and afterwards freed

from the stalks. Lily of the Valley flowers are dried on the stalk. Mr. Holmes writes that a good price is obtainable for these, so that in counties like Lincolnshire, Derbyshire and Westmorland, where they abound, the plants should be well worth collecting. " Lime-tree flowers are gathered with the bract attached." Mallow and Marsh-mallow blossoms are sold with the calyx attached. " Marigold flowers consist of the ligulate florets only, and require careful drying, or they stick together."

These are all little points of technique which the dryer will need to master if he or she desires to submit acceptable samples of drug plants prepared for market, to the buyer. Enquiries should be made of the Herb Growers' Association (or elsewhere) for detailed information of this description before the process of drying or otherwise treating this, that or the other crop is undertaken, otherwise some mistake might be made and the labour thrown away.

SEEDS and " fruits " (the botanical distinction may be ignored) are gathered when perfectly ripe.

" *The whole herb,*" sometimes required, should be understood to mean stem, leaves, flowers and all, plucked up just as the blossom opens.

IV.—METHODS OF DRYING HERBS

Methods of Drying Herbs.

FACILITIES for drying purposes are one of the first necessities of the herb collector, the local H.G.A. centre, and of the grower who has reason for holding his crop for a rise in prices. If practicable, a common drying depôt, preferably in charge of an experienced person, should be the point of concentration for isolated gatherers in any particular locality. If a store-room were to be arranged in the same neighbourhood where the dried herbs could accumulate until wholesale quantities were ready to be marketed, so much the better. This is the plan being pursued in some of the energetic country centres of the Herb Growers' Association.

The only really practical and inexpensive plan to pursue with regard to herb drying is for each Centre to treat its own products. Wherever feasible, each grower should endeavour to master the particular process attached to

whatever crop he may be raising, be it a root, leaf or flower crop. *The "technique" of preparation may be peeling and slicing for roots, stripping for leaf or flower stalks, or taking the required parts only of blossoms; while that of actual drying will be to use exactly the right temperature for exactly the right length of time. This is a matter of experience and practice, and will be best discovered by each operator for himself. The drying "plant" is not so formidable a question as might at first be supposed.*

"In London," Leaflet 288 tells us, "several establishments make it their business to dry medicinal herbs and roots, and if fresh plants are forwarded by passenger train lightly packed in wooden boxes, in the same manner as flowers are marketed, they would probably usually arrive in good condition and be carted direct by the buyer to the drying-room.

"In the forests of Hungary the means of drying are very primitive, consisting simply of a wooden shed divided into compartments of trays made of wire netting tacked on wooden frames. The heat for drying is generated by coke fires, and the ventilation is obtained by making small holes in the walls near the roof.

"Growers may find it useful to dry their crop when possible, as they will then be less dependent on an immediate market for sale, and be able to arrange better terms of sale—unless they grow by contract, when drying may be a mere matter of convenience as between grower and buyer."

Again, however, we have to turn to Mr. Holmes for the bulk of our information. "Ordinary herbs," he says, "with fairly rigid stems, like Peppermint and Wormwood and Yarrow, are best tied up loosely into bundles, and hung on strings or wire, until the leaves are withered, but should be kept under cover in case of a shower. Artificial heat may then be used to dry the stems and thus finish the operation. The bundles should be made as far as possible nearly equal in length, and uniform in size, for convenience of packing. In the case of flaccid herbs, these should be thinly spread on a flat, dry surface, in a place freely exposed to a current of air and sunshine. This may be done in the open air in summer weather, provided an arrangement is made by the use of Willesden scrim or tarpaulin, supported on a roller, so

that it can quickly be drawn over the herbs to protect them in case of a sudden shower. This is especially necessary in the case of Chamomile flowers, which soon turn brown if wetted. Smooth leaves like those of Belladonna, or sticky leaves like those of Henbane, require to be dried in a single layer at first, as they shrivel and become discoloured if treated in masses. The secret of all good drying is to deprive the leaves or other plant organs of moisture as rapidly as possible, and to see that the laminæ or thin part of the leaf is fairly dry before using artificial heat to dry the stems. It must be understood that the majority of plants lose at least 72 per cent. of moisture in drying, and some leaves, such as Belladonna, lose 85 to 90 per cent., so that it usually requires 4 lb. of fresh herb to yield 1 lb. of dried, and in other cases 6 or 8 lb. to yield one. It must also be borne in mind that after herbs, etc., are thoroughly dried, on exposure to the air they will absorb from the atmosphere about 12 per cent. of moisture and become flexible, but leaves that are allowed to do this, although less brittle and therefore more convenient for handling, are apt to deteriorate in physiological action. In some cases, such as Digitalis and Ergot, this consideration is of the utmost importance. I have found, however, by experience, that, if kept chemically dry by means of lime, they retain their activity unimpaired for at least ten years, and probably much longer."

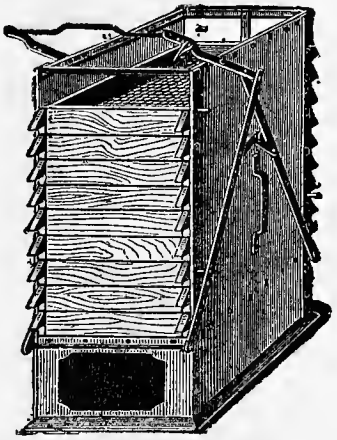
Glass-houses could be converted into drying sheds, especially if heated by pipes. Roots, leaves, seeds, etc., are spread on shallow trays of network, and the temperature is kept fairly uniform between 100° and 103° F.

Most herbs, however, will dry very satisfactorily if hung in a shed protected from rain, and if in a current of air. The warmer the position of the shed the better. Stoves in the proper place would help; or kilns, such as are used for hop drying, would form ideal places. Many dealers require the colour, especially of flowers, to be preserved, but as a matter of fact *natural drying, in the dark without artificial heat*, produces the best therapeutic results.

Drying * can also be accomplished in the half shade

* To store for household purposes the ordinary culinary herbs of the kitchen garden, many of which, when dried, find a place in domestic pharmacy, they should be gathered as usual on a dry day, just as the flowers open. They should be cleaned of dead leaves

in fine summer weather by spreading thin layers of the leaves, etc., on sheets in the open, or on racks or shelves in a freely ventilated shed, turning frequently until quite dry. The leaves and flowers must be kept under cover at night or during rain. "Even colour" is best obtained by quick drying, and the brighter the hue the more saleable the drug. Those who intend to market these things should gather and dry in small quantities at a time, otherwise they will find a large heap of flowers or leaves rather unmanageable. In drying them all dead or discoloured parts should be picked out and all imperfect herbs discarded.



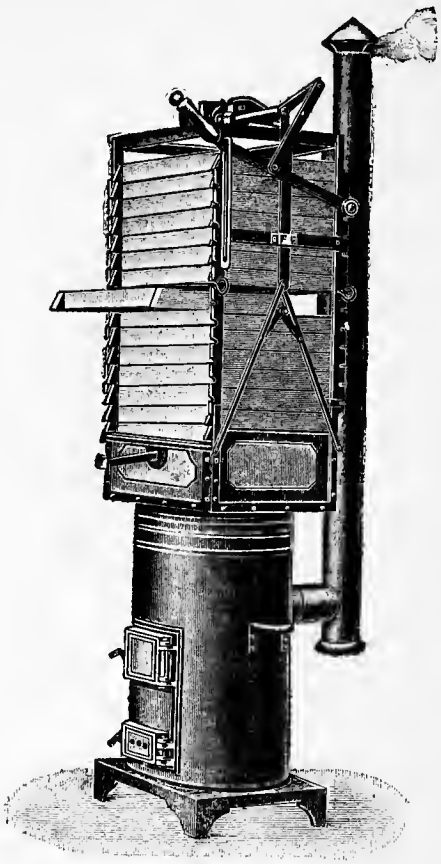
HERB DRYING MACHINE
Small sizes from £1 10s. to £2 15s.

Drying Machine.

There is in London a firm of domestic labour-saving machine makers, Messrs. Medcalfe & Co., Ltd., of Audrey Works, 141 and 142, Great Saffron Hill, E.C., who supply fruit and vegetable evaporating machines at a very moderate cost, which are being used and recommended now for the drying

and insects, tied in small bundles and hung in a brisk draught in the dryest and darkest place handy. The heat of the sun or the fire would destroy both colour and flavour. When quite dry the leaves should be rubbed off the stems, and after sifting to clear them from dust, they should be placed in perfectly dry, wide-mouthed bottles, and corked securely.

purposes of the herb grower and collector. One of these machines represents all the necessary "plant" required for work on a small scale.



THE LARGER EVAPORATOR

The simpler of the two types of apparatus particularly specified costs from £1 10*s*. to £2 15*s*. according to size, and can be used on an ordinary kitchen stove. It contains from six to ten square wooden frames, with a bottom of

tinned wire ($\frac{1}{16}$ in. mesh), forming a series of shallow trays each of which can be taken in and out separately. Larger and slightly more elaborate evaporators, made on the same principle, but for use on an independent stove, cost from £4 to £20 according to size. They are supplied complete with a removable stove for burning coal, coke, or wood, with a smoke pipe and cap for indoor or outdoor service, and contain from twelve to twenty large trays. A thermometer registering to 250° F. and cased in metal can be purchased for use with the machine for about half a crown. The degree of heat necessary for drying barks and roots varies between 80° and 140°. These evaporators are used largely for drying fruit, and since means must be taken to prevent the acids in any escaping juices from corroding the wire netting, the wire is *tinned*. The precaution should always be taken of using tinned wire in making new or additional trays, also for herb drying.

Leaves should not be so heated as to turn brown and shrivel. They should remain green, but be so dry as to become brittle and easily to rub down into powder. Those of Belladonna require special care. They should be laid out one by one on the netting without their edges touching. Other sorts of leaves and herbs, thinly spread, may be turned by placing one empty tray upside down on top of a full one and reversing the two together.

Temperature.

The exact degree of heat required for the drying of this, that or the other drug *is a matter of personal experience and care*. It will be found that herbs and leaves and flowers generally can be dried at temperatures ranging between 60° F. and 100° F. There are secrets connected with the herb industry hard to win from the experts who have discovered them, but there is no reason why others should not experiment successfully in the same field. It is difficult to lay down the law on this point of temperature for each herb. Obviously leaves and flowers require less heat and less time in which to dry than roots and toughish barks. Some stout rhizomes like that of Male Fern take two or three weeks to become satisfactorily dry through and through.

About twelve sorts of English-grown berries are required by the druggists, thirty flowers, more than two hundred "herbs and leaves," more than a hundred roots, and

twenty species of seeds. Some of these, of course, are in much more request than others. The following lists are those generally quoted as comprising the most marketable things in "the drug harvest." They are given in the Reprint (3rd Edition) of two of Mr. Holmes' articles from the *Pharmaceutical Journal* appearing in February this year (1916), and quoted here by the kind permission of that authority.

HERBS AND LEAVES:

Agrimony, Archangel, Avens, Wood Betony, Broom, Buckbean, Burdock, Greater Burnet, Celandine, Centaury, Clivers, Comfrey, Dandelion, Dog Mercury, Eyebright, Equisetum, Figwort, Fumitory, Ground Ivy, Hemlock, Meadowsweet, Mountain Flax, Mugwort, Mullein, Ragwort, Raspberry, Sanicle, Vervain, Wild Carrot, Woodsage, Yarrow.

Belladonna, Chamomile, Feverfew, Foxglove, Germander, Marsh-mallow, Melilot, Motherwort, Pennyroyal, Peppermint, Sundew, Tansy, Woodruff, Wormwood.

Angelica, Balm, Basil, Hyssop, Baytree, Marjoram, Mint, Parsley, Rue, Red and White Sage, Tarragon, Thyme and Lemon Thyme.

FLOWERS

Broom.	Elder.	Marigold.
Chamomile.	Hollyhock.	Marsh-mallow.
Coltsfoot.	Lavender.	Mullein.
Cowslip.	Lily of the Valley.	Rose.
Red Clover.	Lime.	Violet.
Cornflower.	Mallow.	

FRUITS AND SEEDS

Angelica.	Dandelion.	Linseed.
Broom.	Dill.	Mawseed.
Burdock.	Fennel.	Mustard (white and black).
Caraway.	Fænugreek.	Quince.
Celery.	Flea seed.	Stramonium.
Colchicum.	Hemlock.	
Coriander.	Henbane.	

ROOTS

Bistort.	Colchicum.	Lovage.
Black Bryony.	Couch grass.	Male Fern.
Burnet.	Elecampane.	Polypody.
Butterbur.	Gladwin.	Red and Yellow Dock.
Calamus.	Horseradish.	Tormentil.

It is part of the "Green Man's" training to make himself thoroughly familiar with all these plants; to know their haunts, their time of blossom and seed.

Herbals Ancient and Modern.

Many Herbals have been written since the famous one of Nicholas Culpepper (1653). Each in its turn has given place to medical-botanical compilations of ever-increasing scientific value. A modern work of this sort has been brought out in which only those herbs which retain a reputation as simples to-day are included. Surprising as it may be to learn that Scurvy Grass, Dodder, Skullcap, Ragwort, Meadowsweet and Cranesbill have a value in modern medicine, it is not quoting from the unscientific literature of a bygone age to say so, but from Mr. Holmes, the first authority in this country on English botanical drugs, and from Mr. R. C. Wren, F.L.S., of Messrs. Potter & Clarke, than whom, perhaps, no one in London knows more of the commercial side of the question. Their work, *Potter's Cyclopædia of Botanical Drugs and Preparations*, is of the first interest to the herb grower and collector. The limit was set for the length of the list of herbs in this work by two considerations. *Only those of some commercial value* at the present time are included, and those which may be regarded as obtainable. In the present book all the British-grown herbs mentioned in Messrs. Potters' compilation are noted.

Dr. J. E. Taylor, in *The Sagacity and Morality of Plants*, writes that probably we have acquired a more intimate and genuine knowledge of the life-histories of plants within the last [twenty] years than in the whole preceding history of botanical science. This is largely owing to a new school of writers having chosen to treat the subject in a way which has rescued it from dryness and scholastic pedantry, and revealed to us not what a French writer has

stigmatised as the "*prairie morte et sèche*" of Linnæus, but a whole world of romance and ingenuity and wonder—almost of conscious scheme and purpose—in the life-history of the humblest little weed that blows. This being so, even those people who feel least attraction for books on "botany" find their interest awakened, and are enabled to attach individuality to the plants they are endeavouring to get to know.

The Mints, for instance, form a group of Labiate plants collectively recognisable enough, but difficult to distinguish from each other. That the herb grower should be able to tell the species used in medicine from the rest is an important matter, and the reason for this is a highly scientific one. Only the correct species yield the essential oils official in British medicine. Some of the most pungent and universally useful of these aromatic oils are distilled from Spearmint and Peppermint. The chemist has tests by which he can tell as a rule the variety of the plant from which each oil has been derived. He also submits his plants to a periodical analysis in order to ascertain whether or not they contain the requisite amount of active principle demanded by the Pharmacopœia. Hence the importance of recognising the correct species or variety out of the many mints.

V.—HERB GROWING

As it was remarked earlier, herb collecting soon leads to herb transplanting, and so directly to herb culture. There are a number of plants like Tansy, Feverfew, Marshmallow, which are not common enough in the wild state to repay collection, so they need to be cultivated. Few medicinal herbs, properly speaking, are garden plants. They are "children of nature," and in all probability the less gardening to which they are subjected once they are transplanted the better. Most of them are perennials, and are quite equal to taking care of themselves year by year, provided they are weeded and properly protected. A few plants like Meadow Saffron are regarded as garden ornaments, and directions as to their culture may be found in the ordinary manuals of gardening.

In the case, however, of the important medicinal herbs like Belladonna, Aconite, Henbane, Stramonium, and others, which come properly within the ken of the expert grower, the most experienced gardener will be glad to avail himself of the best advice and information to be obtained. It is the difficulties attending the cultivation of these herbs which enhance their market value. Henbane is a difficult herb to rear, and certainly not one with which the beginner is likely to have success. In the case of some plants, like Aconite, the strains might be bettered by cultivation, and the herbal industry improved by a more accurate knowledge thus obtained as to the conditions of soil and temperature under which the highest percentage of active principle can be developed. This is a task for the scientific horticulturist, as " weed " collecting is a task for the beginner.

There are only two sets of conditions which will make for success in the cultivation of the Pharmacopœial medicinal plants. Mr. Holmes has explained the only conditions upon which the isolated grower may succeed : the Herb Growers' Association was formed to *create the conditions* upon which the small worker might hope to do so also. It was because so small a minority of the large number of people who have begun to take an interest in this subject find themselves advantageously situated with regard to Mr. Holmes' conditions that the Association endeavoured to direct and co-ordinate the attempts of those otherwise doomed to failure, and to make a patriotic organisation of a revived industry throughout the country.

The first set of conditions are stated as follows :

" The herb farmer must (*a*) use land as near 10s. an acre as possible ; (*b*) he must have a farm not too far from the railway and the market ; (*c*) a sufficiency of labour upon it ; (*d*) a knowledge of cultivation ; and (*e*) sufficient capital to start with. ' To the ordinary grower the first year's outlay brings in practically no return,' so that a sufficient capital is required to meet the outgoing expenses of two seasons."

Necessary Conditions for Success.

Thus it will be seen that medicinal herb growing is a very different undertaking from weed collecting. The authorities on the subject would wholly discourage the would-be small cultivator from embarking upon it unless

he places himself in touch with some sort of an organisation whose express object is to create a separate set of co-operative conditions which may enable him to succeed.

People may have been misled to some extent by extravagant statements in the newspapers as to the possible profits of the revived herb industry. But on the other hand the exact facts of the case have been set forth by the Board of Agriculture and by Mr. Holmes. Many of the herbs used chiefly by the herbalists have been hitherto obtained from the Continent at prices which undersell the English collector, although ample and generally better supplies could be obtained at home. "But now the prices will rise until the war is over. There is," says Mr. Holmes, "at the present moment a wholesale market in this country for Clivers, Wild Carrot, Horsetail and Fumitory at 20*s.* to 22*s.* per cwt.; for Water and Wood Betony, Centaury and Figwort at 30*s.* to 40*s.* per cwt.; whilst Coltsfoot leaves, Meadowsweet and Ragwort are wanted at 16*s.* to 18*s.* per cwt." Before Leaflet 288 was issued, some experiments were made *by expert growers* as to the financial results to be obtained from a crop of Belladonna, Henbane, and Blessed Thistle. The results communicated to the Board showed that the first yielded £67 4*s.* per acre; the second £112 10*s.*, and the third £50 15*s.*

During recent years the acreage devoted to drug cultivation in this country has been more and more restricted by competition with the wild foreign products, and the result has been a slow but sure ousting of British-grown drugs from the market.

"The advent of a European war has completely changed the situation," says the Board of Agriculture, "and an effort on the part of growers and drug merchants may largely secure for England the collection and cultivation for the future of medicinal plants which can no longer at present be imported from Central Europe." The shortage from Germany and Austria has been made good to some extent by imports from America and Italy. This is not because the plants do not grow in England; nor is it even because we have not here the manufacturing pharmaceutical "plant" and the skilled labour necessary to produce the finished article. There are important manufacturing drug firms not only in London but in the great provincial cities.

Effect of the War on the lapsed English Industry.

It is because we have allowed a home industry to be swamped, and commercial conditions to become as unfavourable to it as possible; because we have lost an opportunity, and failed to create a market at home for our own produce.

The shortage of vegetable drugs like Foxglove, which grows here quite as well as in the Hartz mountains, can be made good, and has been made good, by the buyers asking for increased consignments from the growers and collectors.

The plants of England are no whit inferior to those grown abroad under similar conditions. English Henbane, indeed, is far superior to German in alkaloidal content. Acres of Lavender and the Mints are grown to supply the perfumery trade with those exquisite essential oils which realise a much higher price than those from the great flower farms of the Riviera. (Many of our plants are growing scarce as time and the encroachment of building goes on, so that it is very necessary to do something to preserve those of value.)

Imperial Conference, 1911.

In the year 1911 the Imperial Conference entrusted the Royal Commission on the Resources and Trade of the Dominions with the task of enquiring into the natural resources of the British Empire with a view to seeing how these could be amplified and extended. Among the many subjects investigated was that of drug growing, and the evidence of the witnesses who attended the meetings of the Commission contained information of the first importance to the intending herb grower. Mr. E. M. Holmes spoke on that occasion of the conditions generally upon which a Bureau of Plant Industry might be established in England.

The question is largely one of markets and of capital and of organisation. The conditions brought about by the war alter all the conditions that preceded it, and if hitherto no particular success has attended experiments in herb growing, for want of co-operation, authoritative encouragement, or perhaps of commercial patriotism, now is the time to reconsider the situation and its possibilities.

Mr. Evans, of Messrs. Evans, Sons, Lescher & Webb, Ltd., speaking as a witness before the Commission, showed that England is commercially the clearing-house for the

drug trade of the world; Dutch, German and American efforts in drug cultivation have gradually, however, attracted trade away from the country. Mr. Evans put in schedules, which were characterised as very valuable, containing suggestions as to the way in which the industry might be revived and encouraged. Dill seed as cultivated in Britain (and Germany) is different from that imported wild from India; Coriander is particularly suitable for small holdings; Digitalis is "well worthy of attention"; Fennel could be advantageously cultivated over a more extended area; Henbane—"Great Britain alone furnishes satisfactory drug." It is grown extensively in Germany and the United States, and its cultivation in our Colonies was stated to be well worth attention. Mr. Holmes told the Commissioners that *Podophyllum peltatum* could be grown in the New Forest and in Norfolk; that *Cascara Sagrada* is suitable as a hedge plant in this country, and—what is very germane to the subject—that outside cultivation is wanted even where botanical gardens here and in the Colonies are experimenting. Sir Rider Haggard suggested that essential oil crops are suited for small holders in this country, and it was brought out that even if increased production reduced the price, the crops would still be remunerative.

Some of the evidence went to show that much of the wild material on which we draw for our supplies of drugs is gradually becoming more difficult of access. A consequent scarcity and advance in price due to extra labour in collection and transport follow.

Again, "in those cases where our supplies are drawn from areas under cultivation, this cultivation is often capable of improvement under more systematic and scientific control." The labour on the materia medica farm is, as a rule, ordinary farm labour supplemented by practical experts.

It is noteworthy that trained women gardeners are ready to come forward in considerable numbers to take the place of expert men. The staff at Kew numbers many women horticulturists, and a lady gardener is employed in the Chelsea Physic Garden.

"The better the cultivation the greater the medicinal value of the plant; hence the higher money value. This is well shown by the comparative prices of medicinal

herbs grown in England and in parts of the Continent. Not only are the former richer in active principles, but they are dried and prepared for the market with more care, and also are free from admixture with foreign plants, hence they command in some cases four or five times the price."

Dealing with the question of extending the cultivation of medicinal plants in the British Empire, Mr. Holmes said:

"No country exports its best material, but keeps it for home use. . . . Germany and Austria do not export to this country the finest Henbane or Digitalis or Belladonna or Aconite, and even our Colonies have to accept the cheaper qualities of home-grown drugs unless a high price is paid. Consequently the Colonies * prefer to cultivate their own supplies wherever the climate permits. . . . Possibly the exportation of better qualities of British-grown drugs would obviate the necessity for colonial cultivation, just as the British oil of Lavender and Peppermint always find a ready market, and carefully prepared Foxglove leaves, guaranteed as to activity, find a steady market in the United States. . . . Unfortunately the new *British Pharmacopœia* [1914] does not give any support to British cultivation, . . . thus the cheap imported plants from the Continent can be used."

Turning to the other sources of information which immediately suggest themselves—the authorities at Kew, for instance, and those connected with the drug markets of Mincing Lane—it is found that all agree as to the possibilities of more extensive drug growing in this country, but would urge that every factor in the case of each herb undertaken should receive due consideration before any extensive experiments are undertaken.

It depends entirely upon the would-be grower's financial and other circumstances whether he or she takes up herb culture independently, or under the auspices of the Herb Growers' Association. The south of England is considered the best part of the country for materia medica farming, being in touch with the largest market.

* When the writer was staying on a Canadian prairie farm some years ago, she remembers that the farmer used to receive long lists of wild herbs and weeds from the manufacturing chemists of some of the Canadian and American cities, asking him to note if any were found in sufficient quantity on his land to be worth the prices offered. On the prairie a "Weed Inspectorship" is an important responsibility.

The landed proprietor or the experienced horticulturist whose enterprise is sanctioned by the conditions enumerated by Mr. Holmes is in no need of the intermediary and advisory services of any herb-growing organisation. He has only to get into touch with the buyers, and to contract with them for the delivery at specified seasons and at the proper prices of the herbal crops asked for, or which he decides to raise. The Board of Agriculture will furnish him with a list of the drug firms who will probably be glad to deal with the English grower, and of their requirements. It will supply him with the addresses of seedsmen from whom the seeds, roots and stocks of medicinal plants may be obtained. A good deal of the expert information he may desire on the cultivation of the more important herbs is to be found either in Mr. Holmes' invaluable lectures or in Leaflet 288. The authorities at Kew would doubtless be willing to give the assistance of their advice, and the manufacturers for whom he grows might also do so. The grower on a big scale * may have a few monopolists to compete with, and may find it necessary, in order to make the undertaking pay, to run a pharmaceutical manufactory close to his farm, " so as to utilise the fresh plants in years when the crops are more than equal to the demand by making them into

* It will be observed that there are some herbs like Mustard, Dill, Linseed (an easily germinating crop) which come under the heading of a recognised farm crop rather than that of a garden or allotment. Now that women are endeavouring to replace the ordinary farm hands on the land, and the objection is sometimes raised that many of the branches of farm labour are too heavy for their physical strength, it might be worth the farmer's while to turn his attention to these lighter crops with their small, manageable stooks, and to have them thrashed by flail.

When the intending herb grower desires information on the question of manure and how to manage it, of artificial manures, etc., and of whether such and such a crop would prove exhausting to the soil or not—in what order his herbal crops should be " rotated "—he should send up specimens of the soil in question, *and the burnt ash of the last crop raised upon it.* Chemical assay of this ash determines exactly what mineral constituents have been used up by the vegetable growth, and in what proportions, so that the advice tendered in return will be as to how these matters may be returned to the soil, either by raising a different crop, or by means of manures.

Linseed is a very exhausting crop and cannot be grown both for seed and for fibre, since the production of seed weakens the fibre.

extract or other preparations that will keep." We have already dealt with the question of drying facilities.

Conditions created for the Small Grower.

The small man, however, or the woman with a garden who would like to raise medicinal herbs instead of flowers, can only enter the industry by working in concert with a number of others similarly situated. The terms of subscription to the Herb Growers' Association are modest enough to be within the reach of all, and the advantages of it are such that, without them, the grower with no capital and but small means, slight experience, and perhaps limited time at command, would do far better to raise the ordinary vegetables of the kitchen garden. Members of the Association are entitled to advice and information on every step of their progress, from seed setting to selling the crop. Each Centre manages its own financial affairs, but keeps in touch with the Executive in London for purposes of buying and selling in wholesale quantities. Enquiries may be addressed to the Secretary, Herb Growers' Association, 20 and 21, Queen Anne Chambers, Westminster, S.W.

If the would-be grower has little knowledge of plant culture he or she should join the local Centre as a herb collector. He should forward a list of the weeds of the district to the secretary, enclosing specimens for identification, to be informed in return which of them, if any, command a price in the drug market, at what time of the year they should be harvested, what part of the plant is required, and in what quantities the crop should be forwarded to the nearest local depot for drying and baling and carriage to market. England has been divided for botanical purposes into 112 counties, for the geographical range of her wild plants varies very considerably, and some herbs are of merely local occurrence. Where the natural supply is restricted to this, that or the other part of the country, the collection of that particular drug will be a local affair, and the industry so far as it is concerned will remain a localised one. Couch grass seems to be found everywhere, but it would be idle to look for the plants characteristic of chalk and lime lands in sandy districts; for those which grow at a certain altitude below that level, and for bog and marsh plants in dry meadow land. Hence the advantage of having a sort of central

clearing-house in London for the wild collections from every part of the country. These collections should be made in bulk, as the herbal firms order their goods not by the pound but by the hundredweight and by the ton. It may be useful to recall the larger units of Avoirdupois Measure:

28 lb. = 1 quarter,
4 quarters = 1 cwt.,
20 cwt. = 1 ton.

and to note that drugs are not bought by the bushels and "quarters" of the corn measure.

If the small grower already possesses some field or garden knowledge, he will not have much difficulty in deciding what herbs to cultivate; but he must take into consideration—(1) the length of time they require to mature from the druggist's point of view, (2) the prices offered for them, (3) the loss of bulk undergone in the drying process, (4) the size of ground and character of soil, etc., etc., at his disposal. These are all points upon which the Association would advise him.

The herb gardener will require to discriminate in stocking the ground between those plants which can be raised from seed (*i.e.* most of the annuals and biennials), those which are propagated by division of the roots or rhizomes, by suckers, the rooting of prostrate stems, and in other ways. Roots and seed—if not obtained from wild specimens by personal search—should be bought from the nurseries of materia medica farms, or from the gardens of herb specialists. The seed should not be bought from the chemist, retail or wholesale, as the commercial article is sometimes kiln-dried and useless for germinating Seed bought through the usual channels—the gardeners, seedsmen and horticultural specialists—may not give rise to plants true to medicinal variety. For instance "Valerian" obtained in this way would probably be an ornamental garden plant, *Centranthus ruber*, instead of the wild Valerian (*Valeriana officinalis*) used in medicine. Here again are points upon which information could be sought from the H.G.A.

It should be borne in mind that the younger and fresher the seeds are, the sooner they germinate. The percentage

of those which sprout in seed older than three years is much smaller than the percentage in last year's yield.

The intending grower might be well advised to experiment with perhaps twenty different sorts of seed before he makes his choice of what he will grow in a limited plot of ground. Out of this variety some will be found to germinate almost at once, others will take a longer or shorter time; some will promise well in the soil of the proposed garden, others will not make particularly good progress. Some will fail altogether. The verdict of the first six or eight weeks will show quite plainly which five or so crops out of the entire number it would be easiest and most expeditious to raise. It would be better, of course, to grow five or even a less number of crops on a small piece of ground, properly parcelled out, than a large number in a few mere handfuls of herb. Supposing, indeed, a plant like Coriander or Stramonium promised particularly well, it might be advisable to specialise upon it, and give up the entire piece of ground to that one crop. The number and relative sizes of the crops would be decided upon as the result of the seedlings experiment suggested.

In making it, some knowledge of how to set seeds is advisable. If they are previously soaked (as some varieties with hard husks may be) for a few hours, it should be in rain-water; the small varieties like Henbane and Belladonna should be mixed with fine earth or sand to ensure even distribution in setting. Boxes well bored for drainage are always preferable to pots, and often to seed pans. The grower must be careful to see that the soil is not what gardeners call "sour," and must take the usual precautions to rid it of worms, millipedes, and the common insect pests, if they appear. Nor must the earth in which the seeds are set become waterlogged, although seedlings require a great deal of moisture. Some will need more sun than others. The best way of setting fine seeds in a shallow depth of soil is to strew them by hand over the surface of the prepared boxes and then to shake a little more fine, dry earth over them through the meshes of a sifter. If the weather is inclement, all these boxes could be housed in a cold greenhouse, or under some sort of cover where they would not be deprived of light. Some of the seeds could be "intensively" forced by laying a

sheet of glass over the box, and thus producing a warm, moist atmosphere. All such simple directions as these are to be obtained from any book on gardening, and apply to the beginning of herb culture as to that of flowers.

It is said that a relatively small number of medicinal plants can be satisfactorily grown from seed sown directly in the field, hence the advisability of making sowings in a greenhouse and transplanting the seedlings later on to their permanent quarters. The preparation and tilth of the soil is of the first importance. The seed-bed should be prepared by a thorough mixing of equal parts of garden soil, leaf mould, well rotted manure and clean sand.

The depth of sowing is largely determined by the size of the seeds—the smaller the seed the less the depth, the larger the seed the greater the depth—and the character of the soil. Seeds sown in autumn require more covering than those sown in spring. It can seldom be definitely stated how much seed should be used for sowing a given area : in general the heavier the soil the larger the quantity required. If the plants are to be thinned out, or are particularly subject to the depredations of insects, the free use of seed is recommended. There are no express rules for the cultivation of medicinal plants; the grower's ordinary gardening or agricultural experience must be taken as a guide in most of the details of culture.

This initial experimenting is not at all an expensive business. It postulates perhaps a shillingsworth of penny packets of seeds and a trowel. Potting-boxes can be knocked up at home, and are much preferable to pots.

Long before seedlings are ready to transplant to their permanent quarters the plot of ground destined to receive them should be mapped out and prepared. As with the seed-setting, so would many of the excellent gardening manuals of the day give full information with respect to getting the beds ready for the plants (trenching, bastard trenching, manuring, etc., etc.), thinning them out, preserving them from night frosts, etc. The work is that of the ordinary gardener, and in most cases requires no more skill than may be necessary to raise the hardy and half-hardy annuals which find a place in the borders of the most unpretentious gardens. If the herb grower is in a position to employ a man or boy once or twice a

week in the ordinary way, the fact that the garden has been turned into a miniature materia medica " farm " need not disconcert the latter in the least. He has only to bring his ordinary gardening knowledge and his order-keeping tools to bear upon it.

Books are being produced now to show how to convert the ordinary flower garden to the entirely utilitarian purposes of vegetable growing. No more elaborate instructions would be necessary to remodel it for herb growing. Marketable quantities of a good many herbs may be raised on from one to two acres of land, and small quantities of the more valuable herbs in comparatively rare request could be grown on less. The ordinary culinary herbs and the aromatic " seeds " (fruits) of many of the umbelliferous plants, like Coriander, well known and easily grown things like Parsley, Lavender and Chamomile, the essential oil crops specially recommended to the small holder, all have their own price in the drug market. If they could be cultivated in a score of small gardens or allotments on some sort of a local co-operative basis (by a " Centre " of the H.G.A., for instance), the resulting collective crop ought to amount to a more or less wholesale and marketable quantity.

The list of medicinal plants which follows is a lengthy one because it has been drawn up with a view of enumerating not only (*a*) the important herbs requiring experienced cultivation, nor (*b*) those with which the beginner is advised to content himself, but (*c*) that large host of plants which come within the collector's sphere, and of these, again, not only those of more outstanding value in herbalist medicine like Agrimony and Yarrow, but unimportant things like Dodder and Convolvulus, merely because they still find a place in the modern lists of " simples," and the enumeration would be incomplete without them.

The text aims at giving some information as to the general habitat of the wild plants and the points which distinguish the medicinal species of any particular series from the rest in the same genus. In some cases, like that of the Docks, these brief notes will have to be supplemented by more technical botanical identification. *In most of the instances where a herb comes within the province of the grower, details are given as to the methods of seeding, cultivation, and preparation for market.* The beginner is

advised to be content with collecting for a while, and then to experiment rather with such familiar and easily grown plants as the culinary herbs than with plants like Belladonna and Henbane.

With regard to the plot of land it is proposed to put under a small herbal crop, it must be well understood that there is little of landscape gardening about herb growing. We have elsewhere noted that if land is expressly rented for this purpose, it should be near a railway line, and not expensive. It should be suited in aspect, drainage, and soil conditions to the herbs it is proposed to grow. It must be parcelled out with the greatest economy of space; rectangular beds in a rectangular plot will best meet this requirement.

When remodelling part of a garden for the purposes of herb culture, all details such as the aspect of the garden, its advantages with regard to shade or sun, its position on the flat or the slope, the general character of the soil and subsoil, its full utilitarian extent, any features in it such as big trees, running or ornamental water, and its conveniences in the way of glass and potting sheds, should be considered, so that everything could be arranged to the best herbal advantage.

Everything in the herb garden should be done in a methodical and careful manner. A dated record should be kept of all the work accomplished, giving details as to conditions of temperature, weather, soil, manure, etc., when the seeds are set, when they germinate, when the blossom appears and the plants mature and are gathered. Every bed should be labelled. A good plan to preserve these labels is to soak the pointed ends for some hours in a saturated solution of copper sulphate. If the names of the plants are written with a stout pencil on the upper end when this is freshly painted white and the paint is wet, they do not quickly obliterate.

Where the would-be herb grower is in the unfortunate position of having no land attached to his house he may be able to find means to cultivate a tract of waste land in the neighbourhood, or a vacant building site. The economic need of the nation may presently, perhaps, commend makeshifts of this description to the enterprising and energetic people who would rather turn a back yard into a potato patch than see the ground lie idle.

It will be of interest, possibly, to many of those who are thinking of taking up medicinal herb growing, to hear that there is a Vegetable Drug Plant Farm and school of herb culture at Chalfont St. Peter, Bucks. England has been supplying Russia, France, Italy, America, Norway and Finland with medicinal plants for some time past, and the Principal of this Nursery, who has been asked to supply plants to all parts of the globe, is now preparing to execute orders for Belgium. She receives pupils at the farm, "The Whins," and also undertakes to give instruction by post. All particulars as to fees and course and accommodation can be obtained on application. One of the objects of the work at Chalfont St. Peter is to supply seed and stock to those desirous of raising medicinal herbs. The Principal would not be unwilling to buy the drug harvests raised by growers who have dealt with her for seed and roots. At the present time five or six acres of land on this farm could be put under herb culture were the labour available.

School of Drug Growing in Bucks.

The last thing which the herb grower is required to learn about his crops is how to bale them, after drying, for market. The herbs are sold by sample, but the buyers expect the wholesale consignments to be up to sample, and also properly packed. Any instructions issued on this point either by the H.G.A. or by the buyers should be carefully carried out. It is very interesting to visit the warehouses in London to which resins, roots, gums and drugs of all sorts are consigned from abroad. They are "baled" in such quaint ways—in green hide and thongs, in barrels and boxes, in bundles swathed in every variety of matting, palm-leaf and grass. All this constitutes the business side of the industry, and the more businesslike the English grower can be, the better are his chances of making a reputation with the market.

As a rule most English-grown drugs can be shipped tightly packed in burlap or gunny sacks, dry clean barrels, or boxes as air-tight as possible.

VI.—A NOTE ON INTENSIVE CULTURE

FOR some years prior to the outbreak of the Great War, concern had begun to be felt in this country about the decline of English agriculture.

In 1898 Prince Kropotkin published a comparative study * of the farming systems, prospects and results of the various nations of Europe and of America, which required nothing but emphasis by way of revision for the latest edition in 1912.

His account of the land in this country, the minimum use that is made of it, and the colossal scale upon which it is going out of cultivation every year, would be incredible were it not based upon the widest survey and the most careful statistical data. The conclusions of this masterly summary are, moreover, supported by all the expert and informed opinion in the country. A mass of corroborative evidence is afforded year by year by the ever-growing literature of the subject, and by endless articles both in the general and in the agricultural press.

Early in 1915 the Government appointed a Departmental Committee to enquire into the means that should be taken to increase our food resources in war time.

Among the strong recommendations subsequently made by this Committee were those of—

1. More intensive culture.
2. The ploughing up of a large area of land at present "wastefully devoted to inferior pasture."
3. The taking over by local authorities of waste land at an agricultural rent.

Mr. Holmes remarks that fruits and seeds like Linseed, Caraway and Dill "could probably be grown to a considerable extent [at present they are largely imported], if the Government would allow the estuarine wastes, such as Poole Harbour, where it is said there are 50 square miles of useless mud, to be turned into good land. There are many places around the coast where such wastes could be reclaimed. . . ."

This country has so long looked upon herself as the world-provider of cottons, iron goods, and coal, that she has ceased, comparatively, to be a farming country, and if her imports of food were stopped she could be starved out in a week.

It is a fact, however, that the soil of England under an intensive system of culture could be made to support her entire population even should it double every thirty years! Prince Kropotkin has shown by an irrefutable appeal to an almost world-wide series of facts, figures and illustra-

* *Fields, Factories and Workshops.*

tions, that "the recent achievements of agriculture and horticulture are not sufficiently well known. Our gardeners now defy climate and latitude, acclimatise sub-tropical plants, raise several crops a year instead of one, themselves make the soil they want for each special culture [derive from one acre the produce ordinarily farmed from five], yet the economists nevertheless continue saying that the surface of the soil is limited, and still more so its productive powers."

It is this wonderful system of "intensive" culture, with its frames and bells and mats, which is so successfully pursued in France, especially by the market gardeners around Paris, and which once made of Belgium (naturally an unfertile, and artificially a manufacturing country) the most prolific market garden in Europe.

Restricting the application of all this to one small issue only—that of herb growing in England—it is pertinent to ask whether or not an intensive system of culture might not obviate the objections of those who consider that little or no herb growing would be commercially worth while for the small holder, and the man with but a modest parcel of ground at his disposal.

The suggestion seems to have been made here and there that some instruction on the methods of intensive culture as practised abroad might be afforded to our English people from the presence among them in many localities of so many Belgian refugees. A few Belgian cultivators have found employment in nurseries, etc., but so far as the writer can ascertain no general advantage has been taken in this country of having these intensive agriculturists among us.

It is supposed that there are scarcely any materia medica crops which would give as good returns from any of these reclaimed acreages as the ordinary ones, but under some such system of expert cultivation as that employed in more progressive countries the experiment might well be worth a trial.

VII.—HERBALIST PHARMACY AND THE REVIVAL OF THE DOMESTIC STILL ROOM

WHETHER or no this revival of an old-fashioned industry will result also in the revival of the domestic still remains to be seen.

Herbalist remedies, like other galenicals, may be classified according to the type of physical trouble for which they may afford relief. Thus we have *astringents* like Agrimony, Cranesbill and Raspberry leaves; *demulcents* like Comfrey, Mullein, Marshmallow; *expectorants* like Elecampane, Horehound, Polypody; *diaphoretics* like Chamomile, Peppermint, Yarrow; *nervines* like Skullcap, Valerian, Mugwort; *purgatives* like Rhubarb, Purging Flax; *stimulants* like Bryony, Cloves, Mustard—and all the rest of the classes into which drugs are divided.

They are compounded according to the usual pharmaceutical methods of preparing such things as infusions, decoctions, tinctures, confections, powders, pills, unguents and the like. They are prescribed and administered singly, each drug with a view to its own particular action or according to any of the official herbal formulæ. (An "official" formula, be it remarked, is one from the Pharmacopœia; a "magisterial" formula is one written by the doctor to meet the need of any particular patient.)

Thus it will be seen that in order to become a herbalist —that is to say in order to understand the management of the modern to-be-revived domestic pharmacy, one must not only study the cultivation of medicinal plants, but something also of their therapeutical action, and of the methods of their preparation and administration. The subject is a large one, demanding serious and careful application. The methods of official "B.P." pharmacy sufficiently initiate the intending herbalist into all that goes to make a good dispenser, so that anybody who has taken some recognised course of dispensing study, such as that for the Pharmaceutical Society or for the Apothecaries' Hall, has had this distinct advantage. Perhaps not every one who aspires to be a grower or collector of herbs, sees at first the suitableness of becoming a dispenser as well, but there are others to whom the transition will prove irresistibly attractive and natural.

The remedies and preparations of official British medicine are derived from various sources, although many come from the vegetable kingdom. The rest are mainly mineral derivatives, and the elaborate modern chemical "synthetics." The homœopathic system undertakes the treatment of disease by what is called the "Law of Similars," and its materia medica are dispensed and adminis-

tered after a fashion of its own. While the homœopaths recognise and prescribe many vegetable remedies not used by the allopaths, unlike the Herbalists they include minerals and poisons in their Pharmacopœia.

There is no reason why " botanical " pharmacy should not take its place beside other accepted systems of medicine. Perhaps it is because of its direct appeal to the simple " armamentarium " of Mother Nature, and its valuation of the common weeds so generally ignored or despised, that it keeps its humble and obscure place, overshadowed by the rest.

In no system of medicine, homœopathic or herbalist, is self-treatment advocated, any more than it is in allopathy, beyond that range of simple, easily recognisable ailments which properly come within the range of home solicitude. The suggestion is by no means to exchange the doctor for the quack, or the trained pharmacist for the amateur herbal brewer. But it certainly would be well to have recourse in the small every-day ills of life first to herbal remedies culled from the garden of Simples, infused or " compounded " at home—and only afterwards, if necessary, to the chemist. But even so, the herbalist remedies must be dispensed not according to the rule-of-thumb methods of the past, but according to correct medicinal formulæ. The dispenser must understand the action of the drugs, their percentage of strength, and their correct posology (dose). Few people who have not studied pharmacy realise how responsible an art it is, nor how much of science goes to the making of a clear-headed dispenser.

It has been said lately, in one of our most reputable periodicals, that for some time—possibly for a whole generation—after this terrible war, every Englishman must look upon himself as a poor man, compared to what he was before it. The need for economy will penetrate into every hole and corner of life, and the Garden of Simples will make for frugality in the usually expensive direction of the druggists' bills. The complement of the great Red Cross and V.A.D. movement, which has made something of a nurse of nearly every woman in the country, is this effort to revive the herbal industry, which may lead in its turn to that seemly and fitting extension of her useful education, the study of " domestic pharmacy."

It would be a pity to conclude these remarks without

one or two instances of a herbalist prescription. The first is a "soothing ointment which affords ready relief in rheumatism, inflammations, abrasions":

"℞. Red Poppy flowers, dry	℥j
Elder flowers	℥j
White wax	℥vj
Olive oil	℥j

"Gently simmer the flowers and wax for one hour, add the oil, strain, express, well mix, and keep in a cool place" (*National Botanical Pharmacopœia*).

The second is an infusion for cough:

"Pour a pint (Oj) of boiling water on an ounce (℥j) of the dried leaves and flowers of Coltsfoot, and allow it to stand for about a quarter of an hour. Strain. Take half a teacup of the infusion when cold, three or four times a day (*N.B.P.*).

The third is a remedy for hysteria:

"℞. Mugwort herb, dry	℥ij
Balm herb, dry	℥j

"Infuse in three pints of boiling water in a covered vessel, let it stand until cold, express, and sweeten with lump sugar. Dose, a wineglassful, cold, three times a day."

The following is a pectoral infusion of a truly "blunderbuss" prescription, used on the Continent:

Mallow flowers	1 part.
Red Poppy flowers	2 parts.
Ground Ivy	2 ,,
Maidenhair	2 ,,
Hyssop	2 ,,
Liverwort	2 ,,
Balm	2 ,,
Mullein flowers	4 ,,
Jujubes (fruit)	6 ,,
Currants	6 ,,
Raisins	6 ,,
Marsh-mallow root	10 ,,
Liquorice root	12 ,,
Figs	20 ,,
John's bread	20 ,,
Barley	24 ,,

Equal parts of Goosefoot and Rupture-wort infused together form another Continental remedy for catarrh.

These, of course, are the official formulæ of herbalism. But here and there in some sleepy sun-smitten English village, the like of whose thatched cottages and massy gay-coloured gardens are to be seen nowhere else in the world—where cows feed knee-deep in rich pasture under the midsummer shade of historic English trees—one can still come across a bent old dame in a sunbonnet, who has wonderful things to tell of Sengreen for sore eyes, and of Madonna Lilies for bruises. It would be still well worth while to make a collection of the " grandam's " recipes, and put it among the anthologies of countryside tales and proverbs.

PART II

LIST OF MEDICINAL PLANTS ARRANGED UNDER THEIR NATURAL ORDERS

In this part is indicated: (1) whether these yield any preparations official in the British Pharmacopœia, "B.P."; (2) those plants mentioned in the British Pharmaceutical Codex, "B.P.C."; (3) those used in Homœopathic medicine, "H."; (4) those used in veterinary practice, "V."; and those of marketable value with the herbalists, "×".

The part of the plant required is mentioned; in many cases the season of the year at which it should be gathered is noted, and also its therapeutical action.

Those plants to which the grower's or collector's attention is particularly directed are marked with an asterisk. While, however, the important vegetable materia medica, like Belladonna and Aconite, and—in herbalism, Yarrow and Agrimony—may be said to have a permanent value, there are very many others included in this enumeration, like Dodder and Bindweed, more for the sake of completeness than because they have any value or are in any demand. The "weed" collector should embark on no harvesting unless he has previously ascertained, from the right quarters, if the herbs he can procure will fetch some price in the market.

A supplementary list has been compiled of the trees whose barks or root-barks are used in medicine.

While it is desired to enter brief notes on many of these for the sake of making a complete inventory of the various drug-yielding plants which grow in the British Isles, it is felt that the barks of the timber trees like the Ash concern the "herb" collector so slightly, they are noticed collectively and apart from the rest. Of the smaller trees, however, like Elder, Bay, the Buckthorns, of the

bushes like Juniper and Purple Willow, the various products may come within the herb collector's province, and the flowers of the Lime tree can certainly be regarded as doing so. The shrub Bayberry yields a bark very highly esteemed in herbalist medicine, while the nine small trees belonging to the Rose family yield fruits which are used by the druggists as well as find a market—a far larger one—elsewhere.

Alismaceæ

× WATER PLANTAIN (*Alisma Plantago*) . Leaves.
Diaphoretic, diuretic.

Apocynaceæ

H. × GREATER PERIWINKLE (*Vinca major*) . Whole herb.
H. × LESSER PERIWINKLE (*Vinca minor*) . Whole herb.
Astringent, tonic.

Araceæ

B.P.C. *CALAMUS OR SWEET FLAG (*Acorus Calamus*)
H. V. × . . . . . March. Rhizome (root).
Distinguish from the plants (Flags) of the Iris family. Aromatic, carminative, stomachic.
H. × CUCKOO PINT, LORDS AND LADIES (*Arum maculatum*) . . . . . Root.
Diaphoretic, expectorant.

Aristolochiaceæ

H. × ASARABACCA (*Asarum Europæum*) . . Root, herb.
Emetic, purgative, sternutatory.

Boraginaceæ (the Forget-me-not Family)

H. × *COMFREY (*Symphytum officinale*) . . Root, leaves.
Demulcent, astringent. May. Root in October.
× HOUNDSTONGUE (*Cynoglossum officinale*) . Herb and root.
Anodyne, demulcent, astringent. Gather in May.
× ALKANET (*Alkanna tinctoria*) . . Root.
Colouring agent. (Not British).
× *BORAGE (*Borago officinalis*) . . . Herb.
Diuretic, demulcent, emollient
VIPER'S BUGLOSS (*Echium vulgare*) . . Herb.
Diuretic, demulcent, expectorant.

Caprifoliaceæ

HONEYSUCKLE (*Lonicera Caprifolium*) . Flowers, leaves.
Expectorant, laxative.
MOSCHATEL (*Adoxa Moschatellina*) . . Herb.
(For the trees of the Order see separate list.)

Caryophyllaceæ

× *Chickweed (*Stellaria media*) . . Herb.
Demulcent, refrigerant.

× *Soapwort (*Saponaria officinalis*) . . Leaves, root.
Alterative, deturgent.

Chenopodiaceæ

B.P. Common Beet (*Beta vulgaris*) Juice used as a source of sugar . . . . Farm crop.

*Stinking Goosefoot (*Chenopodium olidum*) Herb.
Nervine, etc.

Cistaceæ

H. Rock Rose (*Helianthemum Canadense*) . Herb.
Alterative tonic, astringent

Compositæ

× Life Everlasting (*Antennaria dioica*) . Herb.
Astringent.

H. B.P.C. German Chamomile (*Matricaria Chamomilla*) . . . . . May. Flowers.
×
Carminative, sedative, tonic.

H. B.P. × *Roman Chamomile (*Anthemis nobilis*) August. Flowers
Stomachic, antispasmodic, tonic. herb.

Mayweed (*Anthemis Cotula*) . . . Herb.
Emmenagogue, etc.

V. × *Hemp Agrimony (*Eupatorium cannabinum*) Herb.
Antiscorbutic, cathartic, etc.

H. × *Milfoil or Yarrow (*Achillea Millefolium*) . . . . . Herb.
Diaphoretic, stimulant, tonic. Gather in August. In sufficient demand to be worth cultivating.

H. B.P.C. × *Wormwood (*Artemisia Absinthium*) . May, July.
Herb, leaves, flowering tops.
Tonic, febrifuge, etc.

H. V. × *Southernwood (*Artemisia Abrotanum*) August. Herb.
Stimulant, etc.

H. × *Mugwort (*Artemisia vulgaris*) . . Leaves.
Diaphoretic, etc. Gather in August.

× *Tarragon (*Artemisia Dracunculus*) . Herb.
Refrigerant, stimulant, etc. Gather in August.

H. B.P.C. *Fleabane (*Erigeron Canadensis*) . . Herb and seeds.
×
Astringent, etc.

× *Golden Rod (*Solidago Virgo-aurea*) August. Leaves.
Aromatic, etc.

× *Cudweed, American (*Gnaphalium obtusifolium*) . . . . . Herb.
Astringent.

H.	ENGLISH CUDWEED (*Gnaphalium uliginosum*. Astringent.	Herb.
B.P.C. ×	*ELECAMPANE (*Inula Helenium*) . . Diaphoretic, etc. Dig in March.	Root.
	MARGUERITE or OX-EYE DAISY (*Chrysanthemum Leucanthemum*) . . . Antispasmodic, etc.	Herb.
×	FEVERFEW (*Chrysanthemum Parthenium*) . Aperient, bitter, etc. Gather in August.	Herb.
B.P.C. H. ×	*PELLITORY OF SPAIN (*Anacyclus Pyrethrum*) Not British . . . . . Local irritant, rubefacient. Not to be confused, because of its name, with Pellitory-of-the-Wall (Urticaceæ).	Root.
H. ×	*SUNFLOWER (*Helianthus annuus*) . . Diuretic, expectorant.	Seeds of cultivated species.
H. B.P.C. ×	*MARIGOLD (*Calendula officinalis*) . . and yellow ray florets. Stimulant, diaphoretic, vulnerary.	August. Herb
B.P.C. ×	*COLTSFOOT (*Tussilago Farfara*) . . Demulcent, expectorant. Gather in February.	Leaves, flowers
H. ×	*GOLDEN SENECIO (*Senecio aureus*) . Pectoral, etc. (Not British.)	Herb.
×	RAGWORT (*Senecio Jacobæa*) . . . Diaphoretic, deturgent.	August. Herb.
×	,, (*Cineraria maritima*) . One or two drops of the fresh juice dropped into the eye is said to be of use in removing cataract.	Herb (cultivated).
×	GROUNDSEL (*Senecio vulgaris*) . . Diaphoretic, etc.	Herb.
H.	DAISY (*Bellis perennis*) . . .	Herb.
B.P.C.	*BURDOCK (*Arctium Lappa*) . . .	Root, leaves and seeds.
H. ×	Alterative, etc. Gather in May; July (root).	
H. ×	*MILK THISTLE (*Carduus Marianus*) . Tonic, etc.	Root and seeds.
	CARLINE THISTLE (*Carlina vulgaris*) .	Flowers.
	SCOTCH THISTLE (*Onopordon Acanthium*) Substitute for rennet as a milk coagulant	Flowers.
×	*KNAPWEED (*Centaurea nigra*) . . Diuretic, diaphoretic, tonic.	Root, seeds.
	*BLUEBOTTLE or CORNFLOWER (*Centaurea Cyanus*) . . . . . Tonic, stimulant.	July. Flowers.
	MOUSE-EAR HAWKWEED (*Hieracium Pilosella*) . . . . . Astringent, tonic, expectorant.	Herb.
B.P.C. H. ×	*WILD LETTUCE (*Lactuca virosa*) . Anodyne, sedative, expectorant.	Concrete juice. (Lactucarium).
×	*CHICORY (*Cichorium Intybus*) . . Tonic, diuretic, laxative.	Root.
H. B.P. ×	*DANDELION (*Taraxacum officinale*) . Diuretic, tonic, etc.	April. Root.

H.	BUTTERBUR (*Petasites vulgaris* . . Cardiac tonic, stimulant, etc.	April.	Root.
H. ×	*TANSY (*Tanacetum vulgare*) . . . Anthelmintic, tonic, etc.	August.	Herb.

Convolvulaceæ

	DODDER (*Cuscuta Epithymum*) . . Hepatic, laxative.		Herb.
	GREAT BINDWEED (*Calystegia sepium*) . Cathartic.		Root.

Crassulaceæ

	*HOUSELEEK or SENGREEN (*Sempervivum tectorum*) . . . . . Refrigerant, astringent.		Leaves.

Cruciferæ

H. B.P. ×	*HORSERADISH (*Cochlearia Armoracia*) . Stimulant, diaphoretic.	March.	Root.
B.P. ×	*BLACK MUSTARD (*Brassica nigra*). .		Seeds
B.P.	*WHITE MUSTARD . . . . Irritant, stimulant, emetic, etc.		Seeds.
B.P.C. ×			
×	*SCURVYGRASS (*Cochlearia officinalis*) . Antiscorbutic, diuretic.		Herb.
×	SHEPHERD'S PURSE (*Capsella Bursa-pastoris*) . . . . . Antiscorbutic, stimulant, etc.		Herb.
	LADY'S SMOCK (*Cardamine pratensis*) .		Herb.
	HEDGE MUSTARD (*Sisymbrium officinale*)		Herb.
	WATER CRESS (*Nasturtium officinale*) .		Herb.

Cucurbitaceæ

WHITE BRYONY (*Bryonia dioica, and B. alba*). Hydragogue. Cathartic.

The plant used by homœopaths under the name of *Bryonia alba* is not a native of Britain, and is imported from the Continent. It is said to have a milder and different action from the *Bryonia dioica*. It differs from *B. dioica* in being monœcious, and in having black berries. White Bryony must not be confused with Black Bryony (*Tamus communis, Dioscoriaceæ*), nor with Mandrake (*Mandragora officinalis*), nor with American Mandrake (*Podophyllum peltatum*), since the root of *Bryonia dioica* is often offered to chemists as Mandrake root.

The roots of the two species, *B. dioica* and *B. alba*, are used indiscriminately in allopathic medicine.

Dioscoreaceæ

× H.	*BLACK BRYONY (*Tamus communis*) . Rubefacient, diuretic.	April.	Root.

Droseraceæ

× H. *Sundew (*Drosera rotundifolia*) . . Herb.
Pectoral, expectorant, demulcent, anti-asthmatic.
Gather July–September.

Ericaceæ

× Trailing Arbutus (*Epigæa repens*) . Leaves.
An American creeping plant, not to be confused with the Arbutus Unedo, or Strawberry Tree.
B.P. × *Bearberry (*Arctostaphylos Uva-ursi*) . Leaves.
Mucilaginous, astringent, diuretic.
B.P. *Wintergreen (*Gaultheria procumbens*) . Leaves.
B.P.C. × Aromatic, astringent, stimulant.
× Partridge Berry (*Mitchella repens*) . Herb.
Diuretic, astringent, etc.

Equisetaceæ

H. × *Horsetail (*Equisetum arvense*) . . Whole plant.
Diuretic, astringent. Gather in May and June.

Euphorbiaceæ

Petty Spurge (*Euphorbia peplus*) . Herb.
Anti-asthmatic.
H. × *Dog's Mercury (*Mercurialis perennis*) . April. Herb.

Filices

H. B.P. V. *Male Fern (*Dryopteris Filix Mas*) February. Rhizome.
× Anthelmintic.
English Adder's Tongue (*Ophioglossum vulgatum*) . . . . . Rootstock.
Antiseptic, deturgent.
Hartstongue (*Scolopendrium vulgare*) . Herb.
Diuretic, laxative, pectoral.
× Maidenhair (*Adiantum Capillus-Veneris*) Herb.
Mucilaginous. Pectoral.
× Polypody (*Polypodium vulgare*) . Rhizome, leaves.
Alterative, tonic, pectoral.

Gentianaceæ

H. B.P. V. *Gentian (*Gentiana lutea*) (Not British) . Root.
× Tonic. "Deservedly the most popular of tonic medicines."—*Potter's Cyclopædia.*
× *Field Gentian (*Gentiana campestris*) Aug. Herb, root.
Bitter tonic.
H. × *Buckbean (*Menyanthes trifoliata*) . June. Herb.
Tonic, deobstruent.
× *Centaury (*Erythræa Centaurium*) . July. Herb.
Aromatic, bitter, stomachic.

Geraniaceæ

× JEWEL WEED (*Impatiens aurea*) and other species . . . . . Herb.
Aperient, diuretic.

× *GARDEN BALSAM (*Impatiens balsamina*) Herb.

HERB ROBERT (*Geranium Robertianum*) . Herb.

B.P.C. × *AMERICAN CRANESBILL (*Geranium maculatum*) . . . . . Root and herb.
Styptic, astringent, tonic. (Not British).

*WOOD SORREL (*Oxalis Acetosella*) . . Herb.
Diuretic, refrigerant.

H. CRANESBILL (*Erobium cicutarium*) . . Herb.
Astringent.

Graminaceæ

B.P. × *COUCH GRASS or TWITCH or QUITCH (*Agropyrum repens*) . . . . . Rhizome (root).
Diuretic, demulcent, aperient. Gather when the fields are being "cleaned" or in March.

H. *SWEET VERNAL GRASS (*Anthroxanthum odoratum*) . . . . . Flowers.
Used in hay fever.

Hypericaceæ

H. × *ST. JOHN'S WORT (*Hypericum perforatum*) Herb.
Useful in coughs, colds, and consumption.
There are perhaps a hundred plants called "worts" of one sort or another, or belonging to this Saint or the other, in the English countryside. "Wort" means a herb.

TUTSAN (*Hypericum Androsæmum*). . Herb.
Vulnerary.

Illecebraceæ

× RUPTUREWORT (*Herniaria glabra*) . . Herb.
Astringent, diuretic.

Iridaceæ

B.P.C. BLUE FLAG (*Iris Germanica* and *Iris* Rhizome.
H. × *Pallida*) . . . . . ("Orris root.")

B.P.C. × FLORENTINE ORRIS (*Iris Florentina*) . "
Fragrant for dusting powders, dentifrices, etc.

YELLOW FLAG (*Iris Pseudacorus*) . . Root.
Astringent, cooling.

WATER FLAG (*Iris versicolor*). American species . . . . . Root.

STINKING GLADWIN (*Iris fœtidissima*) . March. Root.
Anodyne, antispasmodic.

B.P.C. *SAFFRON CROCUS (*Crocus sativus*) . Flower pistils.
H. × Carminative, diaphoretic, etc. Distinguish from Meadow Saffron or Autumn Crocus (Liliaceæ).

The aromatic Pot-herbs, and other plants of the Labiatæ

H. B.P. × *Peppermint (*Mentha piperita*) . . August. Herb.
Stimulant, stomachic, carminative. A Japanese species is the source of Menthol.

B.P. × Spearmint or Garden Mint (*Mentha viridis*) . . . . . August. Herb.
Stimulant, carminative, antispasmodic.

B.P.C. × *Pennyroyal (*Mentha Pulegium*) . . August. Herb.
Carminative, diaphoretic, etc.

*Wild Mint (*Mentha aquatica*) . . Herb.
Emetic, stimulant, astringent.

× *Horsemint (*Monarda punctata*). An American herb, one of the sources of Thymol.

*English Horsemint is *Mentha sylvestris* Herb.
Carminative, stimulant.

× *Catmint (*Nepeta Cataria*) . . Aug. Herb, leaves.
Carminative, tonic, etc.

× *Ground Ivy (*Nepeta Glechoma*) . . May. Herb.
Astringent, diuretic, tonic.

× *Calamint or Basil Thyme (*Calamintha officinalis*) . . . . . Aug. Herb.
Diaphoretic, expectorant.

× *Sweet Clary (*Salvia Sclarea*) (Not British). . . . . Leaves, herb, bark.
Antispasmodic, balsamic.

× *Wild Thyme (*Thymus Serpyllum*) . Herb.
Antispasmodic, carminative, tonic.

× *Garden Thyme (*Thymus vulgaris*) . August. Herb.
Tonic, antiseptic, etc.

Lemon Thyme (*Thymus citriodorus*). . August. Herb.

× *Wild Marjoram (*Origanum vulgare*) . Herb, oil.
Emmenagogue, stimulant.

H. × *Sweet Marjoram (*Origanum Majorana*) August. Herb, leaves (of cultivated plants).
Tonic, emmenagogue, stimulant.

× *Basil (*Ocimum Basilicum*) . . . July. Herb (cultivated).
Aromatic, carminative, cooling.

B.P. × *Rosemary (*Rosmarinus officinalis*) . Herb (cultivated).
Tonic, astringent, diaphoretic.

× *Balm (*Melissa officinalis*) . . . July. Herb.
Carminative, febrifuge, etc.

× *Hyssop (*Hyssopus officinalis*) . . July. Herb (cultivated).
Stimulant, carminative, pectoral.

B.P. × *Lavender (*Lavandula vera*) . . July. Flowers.
Stimulant, carminative.

B.P.C. × *Sage (*Salvia officinalis*) . . .August. Leaves (cultivated).
Aromatic, astringent.

× *Savory (*Satureia montana*) . . Herb (cultivated).
Aromatic, carminative.

B.P.C. × *WHITE HOREHOUND (*Marrubium vulgare*) Herb.
Bitter tonic, expectorant, diuretic.
Perhaps the most popular of herbal pectoral remedies.

× *BLACK HOREHOUND (*Ballota nigra*) . Herb.
Stimulant, antispasmodic, vermifuge.

× *WHITE DEADNETTLE or ARCHANGEL (*Lamium album*) . . . . . June. Herb.

H. × *YELLOW ARCHANGEL (*Lamium Galeobdolon*) . . . . . Herb.

*BUGLE (*Ajuga reptans*) . . . Herb.
Bitter, astringent, aromatic.

H. × *BUGLEWEED (*Lycopus Virginicus*) . Herb.
Sedative, astringent, mild narcotic.
American plant.

× *WOOD BETONY (*Stachys Betonica*) . July. Herb.
Aromatic, astringent, alterative.

× *WOUNDWORT (*Stachys palustris*) . . Herb.
Antiseptic, antispasmodic.

*CLOWNSWORT (*Stachys sylvatica*) . . Herb.

× *GROUND PINE (*Ajuga Chamæpitys*) . Leaves.
Stimulant, diuretic, emmenagogue.
(*Note.*—The American Ground Pine, also used in herbalist medicine, is *Lycopodium complanatum*, a totally different plant belonging to the *Lycopodiaceæ*).

× *PRUNELLA or SELFHEAL, or HEALALL (*Prunella vulgaris*) . . . . Herb.
Astringent.

× COMMON SKULL-CAP (*Scutellaria galericulata*) . . . . . Herb.

B.P.C. *AMERICAN SKULL-CAP (*Scutellaria lateriH. × flora*). (Not British) . . . . July. Herb.
Gather in June.
" One of the finest nervines ever discovered, and may be prescribed wherever disorders of the nervous system exist."—*Potter's Cyclopædia of Botanical Drugs.*

× LESSER SKULL-CAP (*Scutellaria minor*) . Herb.

× *GERMANDER (*Teucrium Chamædrys*) . July. Herb.
Stimulant, tonic, etc.

× *WATER GERMANDER (*Teucrium Scordium*) Herb.
Antiseptic, diaphoretic, stimulant.

× *WOODSAGE (*Teucrium Scorodonia*) . Herb.
Diaphoretic, etc. Gather in July.

*MOTHERWORT (*Leonurus cardiaca*) August. Herb.
Tonic, nervine, etc.

Leguminosæ (the Pea or Pod-bearing Family)

× RED CLOVER (*Trifolium pratense*) June. Flower heads.
Alterative, sedative. Farm crop.

V. LUCERNE (*Medicago sativa*) . . . Herb
Used for fattening purposes. Farm crop. Cultivated.

H. × *Common Melilot (*Melilotus officinalis*) July. Herb.
× *Field Melilot (*Melilotus arvensis*) . Herb.
Aromatic, emollient, carminative. Gather in July.
B.P. × *Broom (*Cytisus scoparius*) . . . Flowering tops collected in May.
Diuretic, cathartic.
Dyer's Greenweed (*Genista tinctoria*) . Twigs, leaves.
Diuretic, etc.
B.P. × *Liquorice (*Glycyrrhiza glabra*) . Root, cultivated.
Demulcent, pectoral, emollient.
× Goat's Rue (*Galega officinalis*) . . Herb.
Stimulant, diuretic, vermifuge. (Not British.)
A plant entirely distinct from Rue (*Ruta graveolens*, Rutaceæ).

Lichenes. Algæ. Fungi

(The *Lichenes Algæ* and *Fungi* are included indiscriminately under one head in this place, since neither here nor in the text is it proposed to call the collector's attention to them. They are enumerated merely for the sake of completeness.)
× Cup "Moss" (*Cladonia pyxidata*) . Plant.
Expectorant.
B.P.C. × Iceland "Moss" (*Cetraria Islandica*) . Plant.
Demulcent, tonic, nutritive.

× Hair Cap Moss (*Polytrichum Juniperium*) Plant.
Diuretic.
× *Sphagnum Moss (*Sphagnum cymbifolium* and other species) . . . . . Plant.
Substitute for cotton wool.
× Liverwort (*Peltigera canina*) . . Herb.
Deobstruent, purgative.
× Lungwort (*Sticta pulmonaria*) . . Plant.
Astringent, pectoral, etc.

× Corsican Moss (*Fucus Helminthocorton*) Plant.
Anthelmintic, vermifuge.
B.P.C. × Irish Carragheen (*Chondrus crispus*) . Plant.
Demulcent, pectoral, nutritious.
Blackwrack (*Fucus serratus*) . .
Oarweed (*Laminaria digitata* and *Stenophylla*) . . . . . Kelp, sources of Iodine.
Bladderwrack (*Fucus vesiculosus*) . Plant.
Antifat.
Laver (*Porphyra vulgaris*) . . . Plant
Used as a food in Devonshire.

B.P.C. Agaric (*Polyporus officinalis*) . . Fungus.
Astringent, purgative.
H. ,, (*Agaricus muscarius*) . . . Fungus.
,, (*Lycoperdon bovista*) . . . Fungus.

Liliaceæ

B.P. H. V. × *Meadow Saffron or Colchicum (*Colchicum autumnale*) . . . . Corm (bulb) and flowers of plants 2 yrs. old. Seeds.
Antirheumatic, cathartic, emetic.
Distinguish from Saffron Crocus of the Iris Family.

B.P. × Squill (*Urginea Scilla*) . . . Bulb.
Diuretic, expectorant, cathartic, emetic.

H. B.P.C. × Asparagus (*Asparagus officinalis*) . . Herb.
Laxative, sedative, cardiac, etc.

× Butcher's Broom (*Ruscus aculeatus*) . Root.
Diaphoretic, aperient, etc.

H. × Garlic (*Allium sativum*) . . . Bulb.
Diaphoretic, antiseptic.

H. Onion (*Allium Cepa*) . . . . Bulb.
Diuretic, expectorant.

B.P.C. *Lily-of-the-Valley (*Convallaria majalis*) May. Whole flowering herb
Cardiac tonic, diuretic.

× Solomon's Seal (*Polygonatum multiflorum*) Root.
Astringent, demulcent, tonic.

B.P.C. H. V. × Green Hellebore (*Veratrum viride*) . Rhizome (root).
American plant. Cardiac depressant.

H. Tiger Lily (*Lilium tigrinum*) . Herb and flowers of cultivated plant.

Madonna Lily (*Lilium candidum*) . Bulb.
Demulcent.

H. Herb Paris (*Paris quadrifolia*) . . Entire plant.

Linaceæ (the Flax Family

H. × *Mountain Flax (*Linum catharticum*) . July. Herb.
Action similar to senna.

B.P. × *Linseed (*Linum usitatissimum*) . . Seed.
Pectoral, demulcent, emollient. Used for poultices (Linseed meal).

Loranthaceae

H. B.P.C. × Mistletoe (*Viscum album*) . . . Leaves.
Nervine, narcotic, tonic, etc.

Lycopodiaceæ

B.P.C. H. × Club Moss (*Lycopodium clavatum*) Plant and spores.
Sedative, emollient. Gather in July and August.

× Ground Pine (*Lycopodium complanatum*) Plant.
Stimulant, diuretic, emmenagogue. (American.)

Malvaceæ

× Common Mallow (*Malva sylvestris*) . July. Flowers, herb.
Demulcent, mucilaginous, pectoral.

× Hollyhock (*Althæa rosea*) . . August. Flowers
Emollient, demulcent.

B.P.C. H. V. × MARSH-MALLOW (*Althæa officinalis*). Flowers, leaves, root (from plants not less than 2 yrs. old).
Demulcent, emollient. Collect in August and September.

Orchidaceæ

× *SALEP, or EARLY ORCHIS (*Orchis mascula*) Root.
Demulcent. Highly nutritious. Used for similar purposes to arrowroot.

Papaveraceæ

B.P. × *RED POPPY (*Papaver Rhœas*) . . Petals.
Colouring agent. Anodyne, expectorant.

B.P. × *OPIUM POPPY (*Papaver somniferum*) . Capsules, and dried juice (opium).

H. V. × *GREATER or GARDEN CELANDINE (*Chelidonium majus*) . . . . . Herb.
Alterative, diuretic, purgative. (To be distinguished from the Ranunculaceous plant, Lesser Celandine, *R. Ficaria*.)

× *FUMITORY (*Fumaria officinalis*) . . July. Herb.
Tonic, diuretic, aperient. Gather in July.

Passifloraceæ

H. × PASSION FLOWER (*Passiflora incarnata*) . Plant.
Antispasmodic, sedative, narcotic. (Not British.)

Plantaginaceæ

H. × GREATER PLANTAIN (*Plantago major*) . Leaves.
Cooling, alterative, diuretic. Water Plantain, (*Alismaceæ*), is a totally different plant.

Polygonaceæ

× SMARTWEED (*Polygonum Hydropiper*) . Herb.
Stimulant, diuretic.

× BISTORT (*Polygonum Bistorta*) . . Sept. Root.
Astringent.

KNOTGRASS (*Polygonum Aviculare*) . . Herb.
Astringent.

SHEEP SORREL (*Rumex Acetosella*) . . Herb.
Diuretic.

× *WATER or SMOOTH-FRUITED DOCK (*Rumex aquaticus*) . . . . . March. Root.
Alterative, deobstruent, deturgent.

H. × *YELLOW or CURLED DOCK (*Rumex crispus*) March. Root.
Laxative, tonic, alterative.

× *ENGLISH RHUBARB (*Rheum rhaponticum*) Root.
Stomachic, aperient.

B.P. × *TURKEY RHUBARB (*Rheum officinale*) and Chinese species. . . . . Root.

Primulaceæ

	COMMON or YELLOW LOOSESTRIFE (*Lysimachia vulgaris*) . . . . . Herb. Astringent, expectorant. Distinguish from Purple Loosestrife (*Lythrariceæ*).	
H. ×	RED PIMPERNEL, SHEPHERD'S or POOR MAN'S WEATHER-GLASS (*Anagallis arvensis*) . . . . . Leaves. Diuretic, diaphoretic, expectorant.	
	PRIMROSE (*Primula vulgaris*) . . Herb, root. Astringent, antispasmodic, vermifuge.	
	COWSLIP (*Primula veris*) . . . April. Flowers. Sedative, antispasmodic.	
H.	CYCLAMEN (*Cyclamen Europæum*) . . Corm (root).	

Ranunculaceæ

B.P. H. V. ×	*MONKSHOOD or ACONITE (*Aconitum Napellus*) . . . . . Leaves, flowering spike, root. Sedative, anodyne, febrifuge. (To be distinguished from "Winter Aconite" (*Eranthis hiemalis*) a yellow garden flower.	
×	*PILEWORT, or LESSER CELANDINE (*Ranunculus Ficaria*) . . . . . Herb, roots.	
H. ×	CELERY-LEAVED BUTTERCUP (*Ranunculus sceleratus*) . . . . . Herb, roots.	
H. ×	CROWFOOT (*Ranunculus acris*) . . Herb, roots.	
H. ×	BULBOUS BUTTERCUP (*Ranunculus bulbosus*) . . . . . Herb, roots.	
H. ×	KINGCUP or MARSH MARIGOLD (*Caltha palustris* . . . . . Herb, roots.	
	LARKSPUR (*Delphinium Consolida*) . . Seeds. Used for asthma and dropsy.	
B.P.	DELPHINIUM (*Delphinium Staphisagria*) . Seeds. Insecticide.	
	COLUMBINE (*Aquilegia vulgaris*) . . Herb.	
H. ×	PÆONY (*Pæonia officinalis*) . . . Root. Anti-spasmodic, tonic.	
H. V. ×	*PASQUE FLOWER (*Anemone Pulsatilla*) . Herb. Nervine, antispasmodic, alterative.	
H.	MEADOW ANEMONE (*Anemone pratensis*). Herb. Continental herb.	
	SETTERWORT (*Helleborus fœtidus*) . . Herb.	
H. ×	BLACK HELLEBORE or WHITE CHRISTMAS ROSE (*Helleborus niger*) . . .Rhizome (root).	
	ADONIS or FALSE HELLEBORE (*Adonis vernalis*) . . . . . Herb. Cardiac tonic, diuretic.	

Rosaceæ

	(For the trees of the Order see separate list.)	
×	*AGRIMONY (*Agrimonia Eupatoria*) . Herb. Mild astringent, tonic, diuretic. Collect in July.	

× *Avens or Herb Bennet (*Geum urbanum*) Herb and root.
Astringent, styptic, tonic, febrifuge, stomachic.
Collect in July.

× Lady's Mantle (*Alchemilla vulgaris*) . June. Herb.
Astringent, styptic.

× *Parsley Piert or Breakstone (*Alchemilla arvensis*) . . . . . April. Herb.
Used in cases of stone and kidney trouble.

Dropwort (*Spiræa Filipendula*) . . Herb.

H. × *Queen of the Meadows or Meadow Sweet (*Spiræa Ulmaria*) . . July Herb.
Aromatic, astringent, diuretic. Collect in July.

Hardhack (*Spiræa tomentosa*) . . Leaves.
Bitter, tonic, astringent.

× *Silverweed (*Potentilla anserina*) . . Herb.
Astringent, tonic.

× *Cinquefoil (*Potentilla reptans*) . . Herb.
Astringent, febrifuge.

Tormentil (*Potentilla Tormentilla*) . Root, herb.
Tonic, astringent.

× Dog Rose (*Rosa canina*) . . . Fruit.

B.P.C. × *French Rose (*Rosa Gallica*) . . Flower.
(Red-rose). Tonic, astringent.

B.P.C. × *Cabbage Rose (*Rosa centifolia*) . . Flower.
Aperient, but used for distilling Rosewater.

B.P. × Damask Rose (*Rosa Damascena*) . . June. Flower.

B.P.C. Wild Rose (*Rosa canina*) . . . Hips.

Wild Strawberry (*Fragraria vesca*) . Herb.
Astringent, diuretic.

Great Burnet (*Sanguisorba officinalis*) . July. Herb.
Astringent, tonic.

H. B.P. × Cherry Laurel (*Prunus Laurocerasus*) . Leaves.
Sedative. Used for distilling Cherry Laurel-water.

× Blackberry or Bramble (*Rubus fruticosus*) . . . . . Fruit, leaves, root.
Astringent, tonic.

Rubiaceæ

× *Clivers or Goose Grass (*Galium Aparine*) Herb.
Aperient, diuretic, tonic, alterative. Gather in May, June.

Lady's Bedstraw (*Galium verum*) . Herb.
Diuretic, alterative.

Crosswort Bedstraw (*Galium Cruciata*) Herb.

× *Sweet Woodruff (*Asperula odorata*) . Herb.
Diuretic tonic. Gather in May.

× Dyer's Madder (*Rubia tinctorum*) . Root.
South European species.

Rutaceæ

B.P.C. *Rue (*Ruta graveolens*) . . . July. Herb.
H. × Stimulant, antispasmodic, emmenagogue.

Saxifragaceæ

B.P. × *Black Currant (*Ribes nigrum*) . . Leaves.
Diuretic, refrigerant, deturgent.

Scrophulariaceæ

B.P. × *Foxglove (*Digitalis purpurea*) . . June. Leaves from 2nd-year plants.
Cardiac tonic, sedative, diuretic.

H. × *Mullein (*Verbascum Thapsus*) . . June. Leaves and flowers, root.
Demulcent, astringent, pectoral.

× Speedwell (*Veronica officinalis*) . . Herb.
Alterative, expectorant, diuretic.

× Brooklime (*Veronica Beccabunga*) . Herb.
Alterative, diuretic.

H. × *Eyebright (*Euphrasia officinalis*) . Herb.
Astringent. Gather in July.

× Figwort (*Scrophularia nodosa*) . June. Herb, root.
Depurative, anodyne.

× Toadflax (*Linaria vulgaris*) . . August. Herb.
Hepatic, detergent.

H. × Water Betony (*Scrophularia aquatica*) July. Leaves.
Vulnerary, detergent.

Solanaceæ

B.P. H. × *Belladonna or Deadly Nightshade or Dwale (*Atropa Belladonna*) . . June. Root, leaves.
Narcotic, diuretic, sedative, mydriatic.

H. × *Bittersweet, Dulcamara or Woody Nightshade (*Solanum Dulcamara*) .
Narcotic, resolvent, diuretic.

× Garden Nightshade (*Solanum nigrum*) . Twigs of 1st year's plants.

B.P. × *Henbane (*Hyoscyamus niger*) . Leaves of 1st and 2nd year's plants.
Anodyne, narcotic, mydriatic.

H. B.P. × *Thornapple (*Datura Stramonium*) Leaves, seeds of cultivated plants.
Anodyne, narcotic, antispasmodic.

H. × *Tobacco (*Nicotiana Tabacum*) (Exotic) . Leaves.
Narcotic, sedative, emetic.

Thymelæaceæ

B.P.C. H. × *Mezereon (*Daphne Mezereum*) . . Bark, root, root-bark.
Stimulant, alterative, diuretic.

Umbelliferæ

B.P. × *Coriander (*Coriandrum sativum* . Seeds (fruit).
Stimulant, carminative, flavouring.

B.P. ×	*Fennel (*Fœniculum dulce*) . . . Stimulant, carminative, stomachic.		Seeds (fruit).
B.P. ×	*Dill (*Peucedanum graveolens*) . . Carminative, stomachic.		Seeds (fruit).
B.P. ×	*Caraway (*Carum Carvi*) . . . Carminative, stimulant.		Seeds (fruit).
B.P.	*Parsley (*Carum Petroselinum*) . .		Seeds and herb. September.
H. ×	Aperient, diuretic.		
H. ×	*Celery or Smallage (*Apium graveolens*) Carminative, tonic.		Herb.
B.P.C. H. ×	*Angelica (*Archangelica officinalis*) . Aromatic, stimulant, etc.		Herb, root, May, seeds, August.
	Sweet Cicely (*Myrrhis odorata*) . . Stomachic, carminative.		Herb, root.
B.P.C.	*Hemlock (*Conium maculatum*) . .		Leaves, seeds, June.
H. V. ×	Sedative, anodyne.		
H.	Fool's Parsley (*Æthusa Cynapium*) . Stomachic, sedative.		Herb.
×	Eringo (*Eryngium maritimum* and *Eryngium campestre*) . . . . . Diaphoretic, diuretic, expectorant.		Root.
B.P.C. H. V. ×	*Lovage (*Levisticum officinale*) . . Carminative.	March.	Root.
×	*Masterwort (*Peucedanum Ostruthium*) Stimulant, etc.		Root.
×	*Sanicle (*Sanicula Europæa*) . . Astringent, alterative.	June	Herb.
×	Wild Carrot (*Daucus Carota*) . . Diuretic, deobstruent, stimulant.	July.	Herb.
	Burnet Saxifrage (*Pimpinella Saxifraga*) Aromatic, carminative.	July.	Root, herb.
H.	Hemlock, Water Dropwort (*Œnanthe crocata*) . . . . . Narcotic, poisonous.		Root.
H.	Water Fennel (*Œnanthe Phellandrium*) Expectorant, alterative, diuretic.		Fruit.

Urticaceæ

(For the trees of the Order, see separate list.)

×	Stinging Nettle (*Urtica dioica*) . . Diuretic, astringent, tonic.	Flowers, leaves, seeds.
H.	Garden Nettle (*Urtica urens*) . .	
×	Pellitory-of-the-Wall (*Parietaria officinalis* . . . . . Laxative, diuretic. Not to be confused with Pellitory (*Anacyclus Pyrethrum*, Compositæ.)	Herb.
H. B.P. ×	Indian Hemp (*Cannabis Indica*) . . Anodyne, hypnotic, antispasmodic. Not to be confused with Canadian or Black Indian Hemp (*Apocynum cannabinum*).	Tops.

H. B.P.C. HOP (*Humulus Lupulus*) . . Female flowers.
× Tonic, anodyne, diuretic, soporific.

Valerianaceæ

B.P. H. × *GREAT or WILD VALERIAN (*Valeriana officinalis*) . . . . . Root.
Anodyne, antispasmodic, nervine. Collect in autumn.

Verbenaceæ

× VERBENA or VERVAIN (*Verbena officinalis*) July. Herb.
Nervine, tonic, emetic, sudorific.
LEMON-SCENTED VERBENA (*Aloysia citriodora*) Leaves.
Used in sachets, also as tea.

Violaceæ

B.P.C. *VIOLET (*Viola odorata*) . . . March. Leaves,
H. × Antiseptic expectorant. flowers.
H. × HEARTSEASE (*Viola tricolor*) . . . Herb.
Diaphoretic, diuretic.

In the Appendix to the Homœopathic Pharmacopœia a few more plants are mentioned, such as the Yellow Water Lily, Laburnum (seeds), Fetid Hellebore, Hogweed, Bitter Candytuft, the Common Rush and Bearded Darnel; but while it is interesting to note that a school of medicine recognises medicinal qualities in these, they are not mentioned in the herbalists' lists, and the demand for them is probably negligible.

Alismaceæ

THE WATER PLANTAIN (*Alisma Plantago*) does not belong to the plantains but to the genus Alisma, so that its name must not cause it to be confused with any of the five British species of Plantago and two other species of Alisma. There is no possibility of confusing the *herbs*, once they are known and identified, but in this instance, as in very many others, the same name or similar names belonging to utterly different plants leads to some mystification for the amateur. The rather small, pale rose-coloured flowers of *Alisma Plantago*, blooming in a loose pyramidal "panicle," * entirely distinguish this plant from the well-known spike-like inflorescences of the various plantains proper, although the leaves of both Alisma and some of the latter are somewhat alike.

* Panicle: the axis or main stem, is divided into branches bearing two or more flowers each.

The Water Plantain has earned a reputation, especially in Russia, as a specific for hydrophobia, and in America as a remedy against the bite of the rattlesnake.

It is a perennial plant abundantly found in this country in watery ditches and ponds, flowering all the summer. It is a British herb, but widely distributed in the Arctic and Northern temperate regions, as well as in India and Australia. The roots contain a quantity of starchy and farinaceous matter, the acrid properties of which are dispelled by drying, so that they are eaten by the Kalmucks. They are also used in medicine in Japan, under the name of *Saji Omodaka.*

Apocynaceæ

The two PERIWINKLES (*Vinca major* and *V. minor*) are well-known plants, the former being frequently cultivated in gardens. Both are found in the wild state in this country in woods, and upon shady banks. They have had some reputation as "simples," and a homœopathic tincture used to be made of the Lesser Periwinkle. The Greater Periwinkle is used as an astringent and tonic. In both cases the whole herb is required.

Araceæ

The root of CALAMUS or SWEET FLAG gives an extract official in American medicine. It is ranked by the herbalists among the febrifuges, and used by veterinary surgeons and by perfumers. French snuff *à la violette* is scented with it. The root imported to the London market is of some value to brewers for flavouring beer, and used to be brought to this country from Germany. In 1856 Dr. Graves wrote recommending for the soldiers when landing at Gallipoli and not able to obtain costly quinine, the Sweet Flag as their sheet-anchor against marsh maladies. The rhizome is collected in May, and the plant is to be distinguished from those of the Iris family by the wavy edges of its sword-like leaves and their fragrance when crushed. At one time the price of this root, from the marshes of Cambridgeshire, was no less than £40 per acre. There is a fair demand for it at present. It should not be confounded with the drug "orris" derived from the rhizome of the *I. Germanica* and other Irises.

"Although Calamus in a wild state is usually found growing in water, it may be cultivated in almost any good soil which is fairly moist. It usually does well on moderately dry upland soils which will produce fair crops of corn or potatoes. The plants are readily propagated from divisions of old roots, which should be set early in the fall 1 foot apart in rows and well covered. During the following growing season the plants should receive frequent and thorough cultivation.

"The roots are harvested in the fall and may be readily dug with a spade or turned out with a plough. The tops, together with about an inch of the root-stock, are next cut off and used to make new plantings. The roots are washed and dried artificially at a moderately low degree of heat. The marketable product consists of the thick rootstocks deprived of their small rootlets, often called 'fibres.' These may be removed before drying, but more easily afterwards, since when dry and brittle they break off readily, with a little handling. Roots thus treated are often called 'stripped,' and are more aromatic than those which have been peeled."—*U.S.A. Bulletin*, 663.

Aroideæ

The CUCKOO PINT (*Arum maculatum*), (also known as Wake Robin, Lords and Ladies, and Common Arum) is a well-known plant. It has many values, and is worth the collector's attention. Its beautiful ovate-hastate leaves are sometimes handsomely splashed with dark purple, a circumstance which gave rise to the monkish legend that this herb grew at the foot of the Cross and caught the drippings of the Saviour's blood.

Preparations from the root this plant were once official in the Dublin Pharmacopœia, and are recognised by the Homœopaths to-day. It must perhaps be noted that there is fashion in medicine, as in everything else, and that this fashion is subject to rapid changes. A plant "official" in one year may be non-official in the next. It may be ousted from a Pharmacopœia, and possibly reinstated later, at the dictates of the fluctuating fashions in physic. The same remark applies to all the galenicals.

The fresh juice of "Lords and Ladies" contains an acrid principle and yields malate of lime, whilst the plant

contains gum, sugar, starch and fat. From the root a "fecula" can be obtained, which after repeated washing makes an excellent substitute for arrowroot, and was formerly sold under the name of Portland Arrowroot from being prepared in that Dorsetshire island. In Lower Poitou it is said that the women cut the stalks of the plant while in flower and soak them for three weeks in water which they change every day, then pour this off, dry the residue and use it instead of soap to wash linen.

The roots should be dug up in the autumn. They can be preserved fresh for nearly a year if buried in sand in a cool cellar. When not intended for immediate use they should be slowly dried with very little heat, and sliced. When perfectly dry they should be powdered and kept in small well-stoppered bottles in a cool place. Fresh root beaten up with gum makes a good pill mass with all the virtues preserved.

Aristolochiaceæ

The English representative of this Family, the erect perennial *Aristolochia Clematitis*, with broad heart-shaped leaves and yellow-green flowers, is only found apparently growing wild as an escape from cultivation. The BIRTHWORT (*Aristolochia longa*) is a South European species.

ASARABACCA (Hazelwort, Wild Nard, Foal's Foot) (*Asarum Europæum*) is a curious little plant with a creeping rootstock, kidney-shaped leaves, and a single purplish-brown bell-shaped flower between them, found in a few localities in the North, and in Wiltshire. The entire plant gathered when in flower is official in homœopathic medicine, and it also enters into some of the tobacconists' "cephalic" snuffs.

Boraginaceæ

A good many of the plants of the *Borage* family, such as Comfrey, abound in a soft mucilaginous juice. The prevailing colour of the flowers is purple, the stems and leaves being rough and hairy. The names of the plants are confusing. *Lycopsis arvensis* is "Bugloss"; *Echium vulgare* is "Viper's Bugloss." These plants are quite distinct from the "Bugles" belonging to the Labiates.

The most important medicinal herb of the Boraginaceæ

is the COMFREY (*Symphytum officinale*), to be distinguished from a smaller species, the TUBEROUS COMFREY (*Symphytum tuberosum*). Comfrey is a well-known plant which flowers all the spring and summer, and is to be found on moist banks and the borders of meadows throughout the country. The herb and the root are used in medicine, and are sufficiently esteemed to make the cultivation of the plant worth while. The cultivated species of COMFREY (*Symphytum asperrimum*) was used as a forage plant for cattle some years ago. The wild herb seems to be one of those to which many well-attested virtues belong. It has a large variety of alternative names—Boneset, Nipbone, Blackwort, etc. It is a large handsome plant and difficult to eradicate, since the least bit of the root will grow.

Of the two HOUNDSTONGUES, the *Cynoglossum officinale*, an erect biennial plant, found somewhat rarely in fields and waste places, is used in medicine. The herb has a rank, heavy, narcotic smell. Its therapeutical activity varies according to age and season, and is most vigorous just before flowering. It was once official in the Pharmacopœias of Edinburgh and London, and is still in use on the Continent and among the herbalists.

ALKANET (*Alkanna tinctoria*) is not a native English plant. The roots are imported from the south of Europe, and yield a rich red dye, used as a colouring agent for pomades, ointments, etc.

BORAGE (*Borago officinalis*). This is a handsome and familiar garden plant. To cultivate it the seed should be sown in April and May in good loam. The seedlings are thinned to 15 inches apart with 18 inches between the rows. The leaves are used. The juice of the plant yields crystals of nitre and table salt. The flowers are blue, star-shaped, with a cone of anthers in the centre.

VIPER'S BUGLOSS (*Echium vulgare*) is a fairly common plant in some parts of Southern England. It is a biennial, and flowers from June to September. It is valued in herbalist medicine as a diuretic, demulcent and expectorant.

Caprifoliaceæ

Seven plants belonging to the Honeysuckle Family are enumerated in the herbalists' lists. Five of these are mentioned in the list of Trees.

HONEYSUCKLE (*Lonicera Caprifolium*). There are three species of *Lonicera* all well-known in England, of which *L. Caprifolium* is often cultivated for ornament. It is distinguished from WOODBINE (*L. Periclymenum*) and from FLY HONEYSUCKLE (*L. Xylosteum*) by the uppermost pairs of its broad leaves in the flowering branches being united at the base, and the heads of the flowers being closely sessile within a pair of leaves united into a single round perfoliate leaf. The blossoms and leaves are used. The former should be picked early in the flowering season.

MOSCHATEL (*Adoxa Moschatellina*) is a small glabrous (hairless) herb found low down in the herbage in moist and shady situations in April. It has three lobed radical leaves, and curious pale green flowers in little square heads on the top of the stem. The plant produces a green fleshy berry, often containing but a single seed.

Caryophyllaceæ

CHICKWEED (*Stellaria media*) is held in much repute among herbalists, and is used chiefly in an unguent. There are four species of Cerastium, one of the eight species of Stellaria, and a plant belonging to the Purslane family, all variously known as Chickweeds. *Stellaria media*, however, is so well known and such a ubiquitous little herb that few could mistake the species. The flowers occur singly in the axils of the upper leaves: a line of hairs grows down one side of the stem only.

SOAPWORT (*Saponaria officinalis*) is said to be superior to Sarsaparilla. A perennial, it is found in hedges near villages, its handsome pink flowers being in evidence from August to September. It yields a principle called "Saponin," which dissolves in water and makes a lather. There are many Saponins: some are poisonous and some are not. Saponin is found in the foreign plants *Senega* and *Quillaia* and in several English herbs besides Soapwort. The seeds of Soapwort are sown from early in April till the middle of June, or in the autumn. The soil should be well dug and manured in preparation for them. Scatter the seed thinly, and lightly cover it with earth. The seedlings should be carefully thinned out and transplanted to their permanent quarters. As the whole

herb is required, the plant should be gathered when just in the perfection of bloom.

Chenopodiaceæ (the Goosefoot Family)

BEET (*Beta vulgaris*). Beet sown in March is ready for lifting in June. The drills should be 1½ inches deep and 18 inches apart. The seedlings should be pricked out to 9 inches apart. Small round Beet is sown at the beginning of April, and again in September. Long Beet is sown in May on rich but not freshly-manured ground. When the roots are lifted, the fork should be stuck well down below them, as if they are even slightly injured they will not keep.

ARRACH OR STINKING GOOSEFOOT (*Chenopodium olidum*) is not a very common herb, found in waste places and on road-sides. It has an unpleasant, very characteristic fishy smell when crushed, and is covered with a sort of greasy meal. The Goosefoots are difficult and variable plants to identify, and there are eleven British species. They have a certain medicinal reputation. The entire herb is used.

Compositæ

Of the plants in the Composite Order, Leaflet 288 tells us that many, such as Feverfew, Mugwort, Southernwood, Wormwood, Tansy, Yarrow, are in steady demand, and although those grown in England are preferred, Continental supplies have to be imported to satisfy all needs.

These plants are for the most part easily grown from seed, but propagation is sometimes by division of old perennial plants. They succeed well from cuttings. Considerable demand will occur, owing to short supply, for Coltsfoot, Feverfew, and Yarrow. Some of these are worth, in the dried state, from 20*s*. to 30*s*. per cwt.

The Composite is the most extensive, and perhaps the most easily recognised botanical family of flowering plants. The head of the Sunflower, with its centre of perfect individual flowers and its surround of imperfect but attractive ray florets, exemplifies the most characteristic of the Composite forms.

LIFE EVERLASTING (*Antennaria dioica*).—The many "everlastings" are generally of exotic genera, but familiar

to us in this country by long cultivation, or, as in the case of the now wild species, by naturalisation. *Antennaria dioica* is a small perennial abundant on moorlands in Scotland, Ireland and Wales, but less so in England. The flower-heads are in compact little white and pink terminal "corymbs." The entire herb is used.

GERMAN CHAMOMILE (*Matricaria Chamomilla*), closely resembles a species of wild Chamomile, STINK MAYWEED (*Anthemis Cotula*). This is a plant used by the herbalists, but by no means so important as the *Anthemis nobilis* or Roman Chamomile cultivated on materia medica farms. German Chamomile has a conical receptacle and linear chaffy bracts among the spread florets; *Matricaria Chamomilla* has a hollow receptacle and bracts under the florets.

ROMAN CHAMOMILE (*Anthemis nobilis*) "prefers a damp common loam, and stiffish black loam gives the best crop of flowers. The usual method of propagation is from 'sets,' each old plant being divided in March into ten or twelve portions, which are planted in rows 2½ feet apart, with a distance of 18 inches between the plants in the row. Chamomile may also be grown from seed, but some of the resulting plants will produce the less desirable single flowers. Weeding is done by hand. The flowers are picked in August and September, if the season is dry. . . . Rapid drying is necessary if the flowers are to retain their purity. They are laid on canvas trays in a heated drying-closet. From 5 to 6 lb. of fresh flowers yield 1 lb. of dry flowers. The yield of dry flowers is about 4 cwt. per acre. They are sorted and graded according to colour. A fairly good product would probably be secured if the flowers were picked as they came, in bright weather, which is the best time for drying, this being done in the open, or in well-ventilated sheds in as thin layers as possible" (Leaflet 288).

The shed, racks, canvas, or tinned wire trays, etc., requisite for drying Chamomile flowers, would answer the same purpose for Broom, Borage, Marigold, Cowslip, Coltsfoot, Cornflower, Daisy, Elder, Hollyhock, Lavender, Lime, Melilot, Poppy, Rose, Violet, Lily-of-the-valley, and the rest of the flowers required by druggists generally.

HEMP AGRIMONY (*Eupatorium cannabinum*) is a tall perennial with numerous pink or purplish flower-heads and long three-lobed leaves. This plant is found on

banks and bushy places near water. It extends all over Britain, flowering throughout the summer. The herbalist drug is used either by itself or combined with others.

MILFOIL or YARROW (*Achillea Millefolium*) needs no description. This very common herb is official in homœopathic medicine, and is recommended to the attention of the herb-collector. Indeed, it would be worth while to cultivate it. The seed could be taken from well-grown wild plants, when ripe, and sown as a crop. (The name must not cause this Milfoil to be confused with the Water Milfoils, totally different plants belonging to the Marestail Family.) The entire plant is collected when in flower and the coarser stems are rejected before drying.

TARRAGON and SOUTHERNWOOD, two cultivated species, and WORMWOOD and MUGWORT, two species of Artemisia found wild, are all marketable herbs.

TARRAGON (*Artemisia Dracunculus*) is grown from cuttings struck in spring in gentle heat, or by division of the roots in April.

WORMWOOD (*Artemisia Absinthium*).—This again is a common wild plant found in hedges, banks, and waste ground. It is cultivated for medicinal purposes. "Sow in spring. Any soil except that of a damp and heavy nature. Parts used—stem and leaves."—*H.G.A. Instructions*.

"The dried leaves and tops have long been used medicinally, but the volatile oil distilled from the plant now forms the principal marketable product.

"Wormwood will grow in almost any soil, but the best results are to be expected in deep, rich, moderately moist loams.

"The plants are harvested when in full bloom and may be cut with a scythe, or a reaper may be used if the area is large. While still fresh, the plants are distilled with steam to obtain the volatile oil. To prepare the leaves and flowering tops for market they are stripped from the stems by hand after the plants are cut and carefully dried in the shade without the use of artificial heat.

"Experimental plantings have given yields at the rate of 2,000 lb. of dry tops or 40 lb. of oil per acre. When grown on a commercial scale the yield of oil appears to average about 20 lb. per acre."—*U.S.A. Bulletin* 663.

Wormwood is also used in making liqueur. The whole plant is required, and should be harvested in August, or as late in the season as it is in flower.

SOUTHERNWOOD (*Artemisia Abrotanum*), another of these greyish aromatic undershrubs, is cultivated on materia medica farms, being used in veterinary practice as well as by the herbalists. An infusion of this drug with Chamomile and Bay was the "*fotus communis*" of a bygone Pharmacopœia.

The dried, unexpanded flower-heads of a variety of SEA WORMWOOD (*Artemisia maritima*) are the source of Santonin, one of the official anthelmintics. This is a much-branched nearly erect undershrub more or less covered with a close white down. The flower-heads are small, each containing from three to five florets. The plant is not a native of this country, but its range extends from the Caspian Sea along the coasts of the Mediterranean to our own shores. The "Wormseed" of commerce is imported from the Levant, and is derived from *maritima* var. *stechmanniana*, sometimes called *Artemisia bina*.

MUGWORT (*Artemisia vulgaris*), a herb with heads of brownish yellow flowers, blossoms late in the summer. Its leaves are acutely segmented, dark green above, white and woolly below. The plant seems to have had many medicinal uses at one time, and to have been used in the treatment of painful joints as a substitute for Chinese *moxa*. Mugwort tea is a rural remedy for rheumatism.

FLEABANE (*Erigeron Canadensis*) is an erect annual or biennial plant found somewhat sparsely on banks and roadsides, and in waste places. The Canadian Fleabane occurs commonly as a weed in waste places, in this country and on the Continent. The flower-heads in this species are small, white, inconspicuous, and numerous, forming a long narrow leafy panicle followed by abundance of seed. The florets also are minute, the outer ones white or pink and filiform, the central ones tubular and slightly yellow. The leaves are narrow and "entire," the stem unbranched. The collector will often find the local chemist not unwilling to assist him to identify botanical specimens, and to decide which is the herb required. The entire plant, Canada Fleabane, is medicinal, and should be gathered when in flower and carefully dried. Oil of Fleabane is distilled from the fresh herb.

The leaves are used of GOLDEN ROD (*Solidago Virga-aurea*), a well-known plant in gardens. It is an aromatic stimulant.

CUDWEED (*Gnaphalium obtusifolium*).—This herb is valued as a remedy for quinsy. There are four species of English Cudweed, all more or less covered with grey and cottony wool, and being very downy to the touch. The various species of Filago and Antennaria have also this cottony quality, so that the Gnaphalium used in medicine must be distinguished from many other plants somewhat like it. *Gnaphalium obtusifolium* is an American Cudweed. The flowers of *Antennaria dioica* (Cat's Ear), white or pinkish in hue, are used as a poultice or given in diarrhœa.

ELECAMPANE (*Inula Helenium*).—This is quite a famous medicinal herb, and is to be found growing in the neighbourhood of old castles and gardens in damp pastures and shady grounds. The Elecampane is a large rather coarse perennial plant, with large bright yellow flower-heads solitary at the top of the branches. The roots are used (sold at 1s. a lb.), and those of plants two or three years old are the best. They should be collected in the autumn. The large ones are sliced when fresh, the small ones are dried entire. They are used in liqueur distilleries, in herbalist medicine, and in veterinary work on the Continent. The root of *Elecampane* resembles that of Belladonna in colour and shape, but is not white inside when scraped.

"Elecampane will grow in almost any soil, but thrives best in deep clay loam well supplied with moisture. The ground on which this plant is to be grown should be deeply ploughed and thoroughly prepared before planting. It is preferable to use divisions of old roots for propagation, and these should be set in the fall about 18 inches apart in rows 3 feet apart. Plants may also be grown from seeds, which may be sown in the spring in seed beds and the seedlings transplanted later to the field and set in the same manner as the root divisions. Plants grown from seed do not flower the first year. Cultivation should be sufficient to keep the soil in good condition and free from weeds.

"The roots are dug in the fall of the second year, thoroughly cleaned, sliced, and dried in the shade. The

available data on yield indicate that a ton or more of dry root per acre may be expected."—*U.S.A. Bulletin* 663.

It is curious that the appreciation of *Elecampane* should have waned in this country in official medicine. It is largely cultivated in Germany, Holland and Switzerland, and contains a crystalline principle resembling camphor, called "helenin," and a starch insoluble in water called "inulin," together with such other important chemical substances as a volatile oil, alantolactone and alantol. Its camphor is a powerful antiseptic, and is said to be used in Spain as a surgical dressing, and to be peculiarly destructive to the bacillus of tuberculous disease. The plant can easily be grown from seed. In France the root is candied, and furnishes the Vin d'Aunée.

MARGUERITE or OX-EYE DAISY (*Chrysanthemum Leucanthemum*). The whole herb is used. It has been successfully employed in whooping cough.

FEVERFEW (*Chrysanthemum Parthenium*, or *Pyrethrum Parthenium*). The leaves of this well-known, easily-grown plant have an aromatic scent when crushed. They are sold at about 1*s.* a lb., and are used by the herbalists. The wild plant is fairly common; a double variety is frequently grown in gardens.

PELLITORY (*Anacyclus Pyrethrum*). The root of this plant is official in the B.P. and in the Pharmacopœia of the United States. The Pellitory of commerce, however, is imported from Morocco. The plant can be cultivated in gardens, but is only half hardy. It is to be distinguished from another (herbal) remedy of the same name, PELLITORY-OF-THE-WALL, but belonging to a different Order, the *Urticaceæ*.

"Insect flowers" are derived from a Dalmatian species, *Pyrethrum cinerariæfolium*.

The SUNFLOWER (*Helianthus annuus*) is grown for seed in Russia and other countries, and it has also been introduced into India. The drug is used in bronchial affections.

The seeds form an excellent food for poultry, and are also given to horses and cattle to keep them in good condition. The oil is extensively used as a foodstuff, and is said to approach more nearly to olive oil than any other vegetable oil known. The oil cake is rich in nitrogenous matter and is largely used on the Continent for fattening cattle.

Jerusalem artichokes are the tubers of *H. tuberosus*, a species of sunflower introduced from the northern United States.

The seeds of Sunflower are sold at about 9*d.* a lb.

The MARIGOLD (*Calendula officinalis*)—to be distinguished from the buttercup plant, Marsh Marigold—is official in homœopathy, both leaves and flowers yielding a tincture useful in the treatment of cuts and wounds. The yellow ray florets are required. They should be collected when the flowers are fully open, and dried very carefully, so that they do not stick together.

"Marigold is a hardy annual plant native to southern Europe, but frequently grown in flower gardens. . . . The dried flower-heads are sometimes used in soups and stews, and the so-called petals (ligulate florets) are employed in medicine.

"Calendula grows well on a variety of soils, but a moderately rich garden loam will give the best results. The seed may be sown in open ground early in the spring in drills 18 inches apart. As soon as the seedlings are well established they should be thinned to stand about a foot apart in the row. In the North it is desirable to sow the seed about the first of April in cold frames or spent hot-beds, and transplant the young seedlings as soon as the danger of frost is past.

"The plants blossom early and continue to bloom throughout the summer. The flowers are gathered at intervals of a few days and carefully dried. The petals (florets) which form the drug may be removed either before or after the flower-heads are dried. The petals are removed by hand."—*U.S.A. Bulletin* 663."

COLTSFOOT (*Tussilago Farfara*), A well-known herb whose yellow flower-heads appear early in the spring, before the large flat leaves. These leaves are much used in medicine and must be distinguished from those of Butterbur. They should be collected and dried before full growth is attained, and when dried rubbed to powder in the hands. They form the chief ingredient in some of the herb tobaccos and cephalic snuffs. The plant abounds on poor stiff soils and on railway banks. Plenty of it is to be had for the trouble of collecting.

Of the immense number of familiar plants belonging to the genus Senecio, *S. vulgaris* or GROUNDSEL, *S.*

Jacobæa or RAGWORT, and an American species not mentioned in Bentham and Hooker (*S. aureus*) are used in medicine, and have a price in the herb market. Neither Groundsel nor Ragwort need any description here. It is said that a decoction of these herbs is good for chapped hands.

The DAISY (*Bellis perennis*) is not in request at present. The plant was once official in some of the Continental pharmacopœias, and is esteemed by the homœopaths to-day.

The BURDOCK (*Arctium Lappa*) is a well-known biennial "weed" much recommended to the collector's attention. The dried root from plants of the first year's growth forms the official drug, but the seeds and leaves are also used medicinally.

"Burdock will grow in almost any soil, but the best root development is favoured by a light well-drained soil rich in humus. The seeds germinate readily, and may be sown directly in the field, either late in the fall or early in the spring. The seed may be sown in drills 18 inches or 3 feet apart, as desired, and should be sown 1 inch deep if in the fall, but less deeply if sown in the spring. When the seedlings are well up they should be thinned to stand about 6 inches apart in the row. Cultivation should continue as long as the size of the plants will permit.

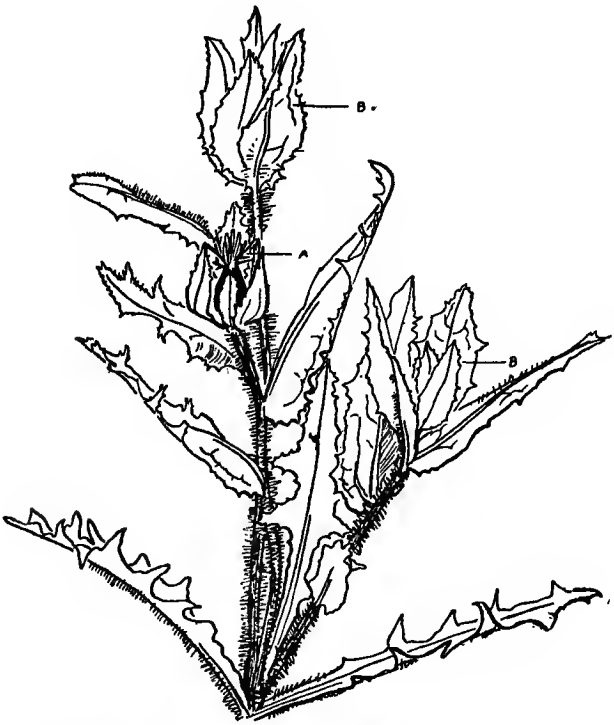
"The roots are harvested at the end of the first year's growth in order to secure the most acceptable drug, and also to prevent the plants from bearing seed and spreading as a weed. The tops of the plants may be cut with a mower and raked off, after which the roots can usually be turned out with a deep-running plough or with a beet lifter. In a dry and very sandy soil the roots frequently extend to a depth of 2 or 3 feet, making it necessary to dig them by hand. After digging, any remaining tops are removed and the roots are washed and dried, the drying being preferably by the use of low artificial heat. The roots are usually split lengthwise into two or more pieces in order to facilitate drying, although whole roots are marketable.

"Yields at the rate of 1,500 to 2,000 lb. of dry roots per acre have been obtained."—*U.S.A. Bulletin* 663.

The plant is one of the finest blood purifiers in the herbal system. The roots, gathered in May, are alterative in their therapeutical action; the seeds (more properly

" fruits "), taken at the end of the summer, are diuretic. The root contains a saponaceous principle like Soapwort. It is said that the stems of this plant, stripped of the outer rind, would form a substitute for Asparagus. Burdock as a single species is distinguished as a genus from Carduus—the Thistles—by its distinctive foliage, by the bracts of the floral envelope (involucre) ending in a long stiff hooked point, and by the short stiff " pappus " or seed-wafting arrangement.

Of the many species of Carduus or Thistle, two are in herbal demand.



SMALL SPECIMEN OF YOUNG PLANT OF BLESSED THISTLE
(*Carduus benedictus*)

The yellow flower heads appear in the bunches of stiff hairy leaves (B), and are surrounded by an involucre of spiny bracts (A).

The HOLY or BLESSED THISTLE (*Carbenia benedicta*) is not a British plant, and is only sparingly cultivated in this country. It is raised from seed early in April or up to the middle of June, scattered thinly and only lightly covered with soil. The leaves and flowering tops are collected just before the flowers open. Drying must be quickly effected, or the leaves assume a grey-green colour. At the present time the dried herb is worth about 38*s.* a cwt. About 3½ tons of fresh herb produce one ton when dried.

The MILK THISTLE (*Silybum marianum*) is a large coarse plant with shining leaves marked with white veins, and has large purplish flower heads. The whole plant has stiff spines on the leaf margin and the seeds and roots are used in homœopathic medicine.

The CARLINE THISTLE (*Carlina vulgaris*) possesses properties similar to *Elecampane*. The Carline Thistle is the sole representative (in this country) of its genus. It is distinguished by the outer bracts of the involucre being very prickly, and the inner ones membranous. This herb is rather common in England, being found on dry and hilly pastures.

KNAPWEED (*Centaurea nigra*) and BLUEBOTTLE (*Centaurea Cyanus*) are two herbs with globular or ovoid "involucres," the "bracts" of which end in a membranous or toothed fringe. The name Centaurea must not cause these herbs to be confused with a totally different plant, the Common Centaury of the Gentian Family.

Two or three species—not necessarily wild ones—of Cornflower, with blue florets, are required by perfumers for giving colour to potpourri. Cornflower fetches a good price, being sold by them at about 4*s.* 6*d.* a lb. A famous collyrium or eye-wash used to be made in France from the flowers of the Bluebottle, called Eau de Casselunettes.

The HAWKWEEDS are nearly as numerous as Groundsels and Thistles. One of them, MOUSE-EAR HAWKWEED (*Hieracium Pilosella*) is used in medicine. Its leaves are much smaller than those of other British species.

The LETTUCE (*Lactuca virosa*) is official in the United States Pharmacopœia, the milky juice of the leaves when dried (Lactucarium), possessing narcotic qualities. There are four British species of wild Lettuce, but *L. virosa* is

an uncommon herb. Chemically it contains a variety of substances distinguished as lactucin, asparagin, mannite, albumin, gum and resin, together with three organic acids. It is a much more medically active plant than the garden species, *L. sativa.*

CHICORY or SUCCORY (*Chicorium Intybus*).—The root is used. This plant, with its handsome blue flowers and big rosette of radical leaves, is not uncommon in the wild state in some parts of England. The common Chicory is produced on a large scale for manufacturing purposes, being prepared by burning to form the familiar ingredient of coffee; but it is another species, Endive (*C. Endivia*), which is grown in the garden for kitchen use. The Brussels Chicory or Witloof, which must not be confused with either, is grown not for the root but for the " chicon " or top. This forms an excellent winter salad and a good vegetable for cooking purposes. Chicory should be sown in April in drills 1 inch deep, 18 inches apart, and thinned out to 8 inches apart when the plants will be ready for forcing in November. " Swine Chicory " (*Arnoseris pusilla*) has radical leaves and leafless branched flower stalks bearing peduncles swollen upwards with small heads of yellow blossoms. It is quite a common cornfield weed.

When DANDELION (*Taraxacum officinale*) is to be cultivated, " about 4 lb. of seeds per acre are drilled in rows a foot apart. Hoeing is needed to keep the crop clean. Flower heads (the " tops," sold at about 10*d.* a lb. dried) are picked off as they appear. . . . The roots are dug the second year in autumn. They may be transported fresh for pressing out the juice or making Dandelion extract, or be washed, cut transversely and dried. The yield should be 4 or 5 tons of fresh roots to the acre in the second year: 100 parts of fresh root yield about 22 parts of dry material." The roast and ground root sold as Dandelion Coffee fetches up to 2*s.* a lb.

Would-be collectors of Dandelion root must bear in mind that only large, well-formed roots are required, and therefore the plant should be sought not on hard roadsides and poor waste places, but in meadows where it has had an opportunity of long free growth.

There are many moist and shady pastures where dandelion grows freshly and freely enough for the roots to attain

marketable size. Under such circumstances it becomes a herb for the collector rather than for the grower. However, the above facts are interesting, since Dandelion has been scarce for the last two years. "Dried English roots have usually been sold in competition with German roots at about 40*s*. per cwt., but after the outbreak of war this rose to 130*s*. per cwt. In the early part of 1916 even the *fresh* root was worth 8*s*. to 10*s*. per cwt. The roots are dug in the fall of the second season after planting the seed. They should be washed and may be dried whole, or, to facilitate handling and drying, they may be cut into pieces 3 to 6 inches long and the larger portions sliced. Under favourable conditions, yields at the rate of 1,000 to 1,500 lb. of dry roots per acre have been obtained from second-year plants."—*U.S.A. Bulletin* 663. The intending grower has to ask himself (1) how these returns compare with those of the ordinary market garden crops, and (2) how the herbs compare from the point of view of labour, cultivation and risk, with such things as cauliflowers, potatoes, radishes, etc., before he decides under which he will put his land. The same remark applies to all cultivable herbal crops.

BUTTERBUR (*Petastites vulgaris*).—The leaves of this plant, which are the part used in medicine, resemble those of Coltsfoot, only they are generally larger and have a less sinuate margin. The herb is common in sandy meadows, on the banks of streams. The flower heads are quite unlike those of Coltsfoot, being dull pinkish-purple in colour, arranged in a big head of clusters, and are produced in March before the leaves appear.

The TANSY (*Tanacetum vulgare*) is a stout erect perennial, with creeping stems, slightly downy, with a strong scent. It has large elaborately cut leaves and numerous golden-yellow flower heads in a large terminal corymb. It grows wild all over Britain. The herb is sold at *7d*. a lb., and herb collectors are advised that at the present time it is well worth collecting and cultivating.

It can be grown from seed or by division of the roots. Seedlings should be planted 15 inches apart. The plant is very hardy.

"Tansy grows well on almost any good soil, but rich and rather heavy soils well supplied with moisture favour a heavy growth of herb. It may be propagated from seed,

but is more readily propagated by division of the roots early in spring. The divisions are set 18 inches apart in rows 3 feet apart. Seed may be sown very early in the spring in the open or in seed beds, and the seedlings later transplanted to the field. Such cultivation as is usually given to garden crops will be sufficient.

"The plants are cut late in the summer, when in full flower, the leaves and tops being separated from the stems and dried without exposure to the sun, as the trade desires a bright-green colour. For the volatile oil the plants are allowed to lie in the field after cutting until they have lost a considerable portion of their moisture. They are then brought to the still and the oil removed by the usual method of steam distillation.

"A yield of about 2,000 lb. of dry leaves and flowering tops per acre may be obtained under good conditions. The yield of oil varies, but about 20 lb. per acre is a fair average."—*U.S.A. Bulletin* 663.

Convolvulaceæ

The DODDER (*Cuscuta Epithymum*) is a fairly well known weed. There are three Dodders, all of them leafless parasitic plants, whose red stems twine about their hosts like tangled string. *Cuscuta Epithymum* is found in open sunny situations clambering about Thyme and Heath and shrubby plants generally. Its small globular pinkish flowers last throughout the summer. The whole herb is used in medicine as a hepatic and laxative. It is the smallest of the Dodders.

There are three species of Convolvulus, of which the GREAT BINDWEED (*C. sepium*) is used in medicine. (It is distinguished from the cultivated coloured Convolvuli of the garden by its pure white trumpet-shaped blossoms; from the Lesser Bindweed by its size in every part, and from the Sea Bindweed by the pink blossoms and kidney-shaped leaves and dwarf habit of that species. The BLACK BINDWEED (*Polygonum Convolvulus*) is a totally different plant, belonging to the *Polygonaceæ*, although it has a twining stem like the Great Bindweed. Its tiny white blossoms, however, occur in little loose clusters, and its leaves are heart-shaped instead of being broadly ovate

with angular lobes at the base like those of *C. sepium.*) The Great Bindweed, a well-known beautiful "weed," is said to yield a resin which could act as a substitute for the official Scammony resin. The root is the part used.

Crassulaceæ

HOUSELEEK or SENGREN (*Sempervivum tectorum*). This herb, which grows wild on cottage roofs and old walls, and as a cultivated plant in rock gardens, is a well-known if an uncommon "simple." The fresh leaves have a good herbalist reputation. They grow in thick succulent fleshy rosettes. The flowers are pink and sessile along the spreading or recurved branches of the inflorescence, (a cyme *).

Dr. Fernie devotes four pages to a herbalist's appreciation of the various Stonecrops. Ten species of Sedum are enumerated in Bentham and Hooker, but the Stonecrop used in herbalist medicine, VIRGINIAN STONECROP (*Penthorum Sedoides*), is an American herb.

Cruciferæ

This is a very large family of plants, easily recognised by its flowers being arranged in fours, crosswise. It is, however, divided into an enormous number of genera, distinguished from each other by minute variations in the characters of the seed or the pod. Many herbs of this family are very biting and pungent to the taste, like Horseradish root, the Cresses and Mustard. About eight figure in the lists of medicinal herbs, all of which are so well known as to need no description.

HORSERADISH (*Cochlearia Armoracia*). The root of cultivated Horseradish is official in the B.P. It must be carefully distinguished from that of Aconite. Horseradish is larger and longer than the latter, pale yellowish-white or brownish-white externally, instead of being dark brown like Aconite, inodorous when broken, but exhaling a quite characteristic scent when scraped. Aconite root is tingling to the taste, but horseradish is biting and not tingling; a dangerous mistake is made in taking Aconite for Horseradish.

The "radical" leaves of *Cochlearia Armoracia—i.e.* those

* Cyme: a succession of pedicels or flowers talks on the upper side of the lateral branches, each originally a terminal pedicel, but becoming lateral by the development of one outer branch only, immediately under it.

which spring on long stalks from the rootstock are bold, broad and long, with sinuate toothed edges, but the lower leaves springing from the stem are often so deeply cut as to be almost "pinnatifid." The flowers are small and white; the pods seldom come to perfection in this country, so that the plant is propagated by pieces of root. These can be planted in January and again in November, 2 feet apart each way, in well trenched and manured ground, so that the top of each root-piece is about 4 or 5 inches below the surface.

BLACK AND WHITE MUSTARD are grown on the scale of farm crops. They are said to be exhausting to the soil. Both are official in the B.P. Mustard oil (*Oleum sinapis*) is distilled from the seeds of Black Mustard. It is colourless or pale yellow, sinks in water, and produces immediate vesication of the skin. Black Mustard is a less hairy herb than White, and has rather smaller flowers. Its pods are smooth, erect, and pressed to the central stem; those of White Mustard are rough, hairy, spreading, with a sword-shaped beak. The seeds of the two plants, black and yellow in colour respectively, ground and mixed, constitute the mustard of commerce.

SCURVYGRASS (*Cochlearia officinalis*) is not uncommon on the shores of England and Ireland. It is a low diffuse biennial, valued in herbalist medicine for its well-attested anti-scorbutic properties. It flowers all the summer, but varies much in the size and shape of all its parts, and has been divided into many species.

SHEPHERD'S PURSE (*Capsella Bursa-Pastoris*).—One of the commonest weeds everywhere. Always recognisable by its triangular-shaped seed pods on small pedicels sticking out all round and up the stems. The herb has a good reputation in herbalist medicine and history.

LADY'S SMOCK (*Cardamine pratensis*). The pinnate leaves of this herb, and its large and showy flowers of white tinged with pinkish purple, are well known. The plant is found abundantly in moist meadows. Whether or not it is much used now, it had a good name in the past, and was formerly in the London Pharmacopœia.*

* The various Pharmacopœias of London, Edinburgh, and Dublin became the "British Pharmacopœia" after 1874. The last edition of this work, published in 1914, includes the Pharmacopœias of the Colonies and of India.

HEDGE MUSTARD (*Sisymbrium officinale*).—There are about seven cruciferous plants called various sorts of Mustard, only three of which—the White and Black cultivated Mustards, and Charlock—belong to the same genus, Brassica. Hedge Mustard belongs to a genus which includes one of the many Rockets. It is an erect annual, about 1 foot high, with rigid spreading branches and very small yellow flowers. It is abundant everywhere.

A running stream of clear water is essential to the successful cultivation of WATERCRESS (*Nasturtium officinale*). There are three British species of Nasturtium. (*Note.*—The "Cress" eaten with "Mustard and Cress" is *Lepidium sativum.*)

Cucurbitaceæ

There are two plants called White and Black Bryony respectively, growing wild in England. They are totally different plants, belonging to different families. They are somewhat alike in habit, both being climbers, both bearing small greenish flowers, both being perennials and found entangled in hedgerows.

WHITE BRYONY (*Bryonia dioica*), however, climbs by means of its tendrils; BLACK BRYONY (*Tamus communis*) climbs chiefly by means of its twining stem *and climbs to the left.* Most climbers seem to climb towards the right. White Bryony has rough small palmate leaves, Black Bryony has large shining heart-shaped leaves. White Bryony has dull red globose berries; those of Black Bryony are also red, but shining.

The English White Bryony root should be dug up before the plant flowers in October. The root of this plant is nearly white, that of B. Bryony is blackish externally. The Homœopathic Pharmacopœia requires Bryony root to have the stems of the plant and its leaves attached for the sake of correct identification.

The WHITE BRYONY (*Bryonia alba*) (root official in homœopathy) does not grow wild in this country, but requires to be cultivated. The roots are collected in autumn, and are used either in the fresh or dried condition. They have a similar purgative action to Jalap or Colocynth. *B. alba* and *B. dioica* are much alike in habit and appearance; the berries, however, of the former are globular and black, those of the latter being red.

The American White Bryony is sometimes very confusingly called English Mandrake.

Dioscoreaceæ

The second of the two English Bryonies, BLACK BRYONY (*Tamus communis*), belongs to this group of plants. It has small yellowish-green flowers, red or orange berries, and is a hedge-climbing plant like White Bryony, but its bright, shining heart-shaped leaves—although sometimes almost three-lobed—serve to distinguish it from the latter, which has distinctly five or seven-lobed leaves of a different shape and smaller size. Black Bryony is dispersed over the whole of England. The root is official in homœopathic medicine. The two Bryonies are said to differ considerably in their medicinal properties, preparations from the "Black" not being given internally.

Droseraceæ

SUNDEW (*Drosera rotundifolia*) is a very curious little plant found all over England in boggy and marshy districts. There are three species, of which *D. rotundifolia* is official in homœopathy. The entire fresh herb is used, and should be gathered from the beginning of flowering in early summer to September. The shining glandular hairs on the little leaves of Sundew distinguish it from all other British genera. It grows plentifully in Hampshire, about the New Forest, and in the Lake district. It is perhaps the best known of the few English representatives of insectivorous plants, like Butterwort, Bladderwort, and Toothwort. One possible explanation of the interesting habits of plants of this description is that there may be a lack of nitrogenous material in the soil where they grow, so that they are obliged to provide themselves with this material by other means than the usual ones.

Ericaceæ

We need enter no notes on the Arbutus, except to point out that it is not Trailing Arbutus, the English "Strawberry Tree," also called Arbutus, but an American species (*Epigæa repens*).

BEARBERRY (*Arctostaphylos Uva-ursi*), whose flowers somewhat resemble those of the Arbutus, is a plant found on rather dry, heathy and rocky hills in the North of Britain, its procumbent stems and masses of small evergreen leaves covering large spaces of ground. It forms small round red berries. These leaves, official in the B.P., are to be selected and picked in the autumn and dried by exposure to gentle heat. (The leaves of Box and of Cowberry are sometimes mistaken for those of Bearberry, but the under surface of Box leaf is easily separable, and Cowberry leaves have brown dots scattered on their under surfaces.)

There are five species of *Pyrola* or WINTERGREEN growing wild in England, but the medicinal plant, *Gaultheria procumbens*, is American, and must be cultivated. It can be easily grown in this country, and is to be seen in all materia medica gardens. It is a procumbent herb covering the ground with dense masses of dark green leaves. It forms, in the autumn, bright red berries. The oil distilled from this plant is official in the British and United States Pharmacopœias.

"Both the dry herb and the oil form marketable products.

"Like other woodland plants, wintergreen thrives only in partial shade, and plantings should be made in a grove or under a specially constructed shade, such as is used for ginseng or golden seal. A fairly good growth may be expected in soil which is thoroughly mixed with leaf mould to a depth of 4 inches or more. Wild plants may be used for propagation. Divisions of these may be set in the fall or spring, about 6 inches apart each way, in permanent beds.

"Wintergreen is usually gathered in October or at the end of the growing season. The plants are carefully dried and packed in bags or boxes for marketing. For the production of the volatile oil the plants are soaked in water for about 24 hours and then distilled with steam." —*U.S.A. Bulletin* 663.

PARTRIDGE BERRY (*Mitchella repens*) is another American medicinal plant.

Equisetaceæ

The Horsetails are well-known but very curious plants. There are ten species of them—the one used in herbalist

practice, *Equisetum arvense*, the FIELD or COMMON HORSE-TAIL, being found abundantly in fields and in moist and waste places throughout the country. Like the Cacti, the Horsetails are survivals perhaps of the flora of the coal-forming period of the world's natural history. The FIELD HORSETAIL is a different plant to the Marestail, a single aquatic species belonging not to the *Equisetaceæ* but to the *Haloragaceæ*. The plants resemble each other in habit, but have no botanical affinity. The collector should make a point of comparing the horsetails, and of distinguishing between the barren and the fruiting forms. The fruit forms a spike at the tip of the stem, and in some species is produced on special fertile branchless stems, destitute of green colour.

Calamites is a fossil form of this order that attained a large size during the Carboniferous period.

Some of the irrigation ditches on the flat pasture-lands between Birchington and Herne Bay are filled with the serrated ranks of Marestail every spring. The Horsetail should be collected in July.

The Horsetails, like so many other common plants, are not without their economic use. Owing to the presence of a large amount of silica, the stems are so rough that they are used to polish wood, and even metals.

Euphorbiaceæ

The Spurges form a vast family, chiefly tropical, so varied in aspect that no general idea can be formed of it from the three genera which represent it in Britain.

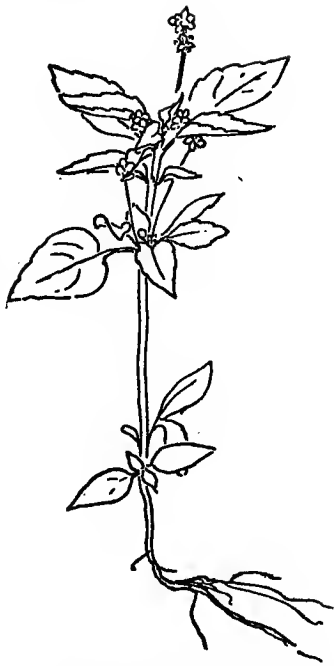
There are twelve species of the genus Euphorbia, one of which, a very familiar English weed, is the PETTY SPURGE (*Euphorbia peplus*). It is a yellowish-green annual about a foot high, with an abundance in its stalk of the white milky juice from which its rustic name, "Devil's milk," is derived. This plant is mentioned in *The Extra Pharmacopœia* of Martindale and Westcott, as being of service in cases of asthma and dyspnœa. The whole herb is used as an infusion, but it is to be doubted if it is in much demand.

There are two species of DOG'S MERCURY in the genus Mercurialis—the annual and the perennial. Only the perennial herb is used in medicine.

The annual Mercury is not so common as the perennial, which is found everywhere in woods and copses.

The annual flowers throughout the summer, its tiny inconspicuous green male and female blossoms being usually borne on separate plants. The former are clustered together in little bunches on the sides of slender peduncles, the latter are closely sessile in the axils of slender lanceolate leaves growing up the entire length of a main stem.

The perennial Mercury flowers in early spring, beginning before the leaves are quite out. It is very abundant. The herb would not repay to collect, unless explicitly ordered, although it is in modern herbalist use.



DOG'S MERCURY (*Mercurialis perennis*)

Seedling of Dog's Mercury, showing the clustered male flowers. Open in April.

Filices

Of the numerous Ferns which grow in England, wild or cultivated, only one is " official," with a standing value in the drug market, although four others find a place in the lists of the herbalists and may sometimes meet with a demand. This is the MALE FERN (*Dryopteris Filix mas*), common to our woods. It is often found, together with a tangle of other varieties, on banks where fine greensand, washed from higher ground by the rains of autumn, mixed with the heavy leaf-fall of the locality, has formed through the agency of the worms the light moist mould it requires. This Fern is a difficult one for the amateur to distinguish

from others very like it. Its fronds closely resemble those of the Lady Fern—a species without value in medicine. The latter, however, is a more delicate plant than the former, and cannot stand the lightest touch of frost, whereas Male Fern in a sheltered spot will sometimes remain green throughout the winter.

The distinction lies in the root or "rhizome" (underground stem), which also happens to be the commercial part of the plant, so that once Male Fern rhizome is recognised it will not be mistaken again. Unlike "Filix Fœmina," which has only two large wood "bundles" in the leaf base, "Filix Mas" has from seven of these to nine. It is a brown tangled scaly mass with persistent bases of stalks and root fibres. It should be dug in late autumn from well-grown plants, divested of roots, leaves and dead matter, and carefully dried right through. It yields an oleo-resinous extract which is one of the most valuable anthelmintics in the B.P. The English oil of Male Fern is more reliable than that which is imported from the Continent. The knowledge of the remedy had become lost until in 1775 it was repurchased by the French Government for 15,000 francs from a surgeon's widow who possessed the secret.

Male Fern is found abundantly in some of the Sussex ditches and hedgebanks, in Dorset, Devon, and many other counties. It grows luxuriously in moist, sheltered situations. Any rhizome grown or collected from wild plants just now will meet with a ready sale. The rhizome should not be kept for more than a year for medicinal purposes.

The rootstock of ADDER'S TONGUE (*Ophioglossum vulgatum*), a perennial found in moist meadows and pastures, yields a preparation known as the "green oil of charity"; the HART'S TONGUE (*Scolopendrium vulgare*) (whole herb used) was formerly one of the five great capillary herbs; the true MAIDEN-HAIR (*Adiantum Capillus-Veneris*) (a stranger in England except in the West country, and to be distinguished from Common Maidenhair Spleenwort by the shape of its fronds) is used in the "famous elegant French syrup" called "Capillaire," and given in pulmonary catarrh. The rhizome of POLYPODY (*Polypodium vulgare*) —a fern which grows plentifully on old walls and stumps of trees and in shady places—has retained a certain

medicinal reputation. Dr. Fernie has much of interest to say about more varieties still, but it would be perhaps waste of space in this book, and waste of effort on the collector's part, to direct attention to anything but *Filix Mas* unless the other things were ascertained to be in request.

Gentianaceæ

GENTIAN LUTEA, the official Gentian of the British Pharmacopœia, which yields three preparations, is not a native or a wild plant in England, although it can be grown here. It has a large, stiff, ovate leaf with prominent nearly parallel ribs. The root is used.

GENTIAN CAMPESTRIS, English or Field Gentian, is a bitter tonic. The root and the herb are used. There are five British species of Gentian, this one being easily recognised by the parts of the blue tubular flower being in fours, not in fives. It is common on open pastures and in calcareous districts, flowering from July to October.

The entire herb is used of BUCKBEAN (Bogbean, or Marsh Trefoil) (*Menyanthes trifoliata*), an aquatic plant found all over Britain in boggy places and shallow ponds. It is locally plentiful, and has beautiful white flowers, the inner surface of whose five fleshy petals are covered with a lace-like fringe, and are tinged with pink outside. But few besides botanists seem to be acquainted with it. The leaves should be collected in the spring. Like many non-official plants, which some people would be inclined to ignore as mere herbalist remedies, *Menyanthes trifoliata* yet finds mention in no less authoritative a work than *The Extra Pharmacopœia* of Martindale and Westcott. It is described, among other things, as a bitter tonic.

There are four wild species of CENTAURY, square-stemmed, and each bearing flat tufts of flowers more or less rose or mauve coloured. The name, however, is not appropriated only to these plants of the Gentian family, for there is a whole series of herbs belonging to the Composite Order, related to the Bluebottle and Hardheads, also often called Centaury. The latter have a value in herbalist medicine, but must not be confounded with the present subject. CENTAURY (*Erythræa Centaurium*) is common

in Britain, being found in dry pastures, woods, and on chalky cliffs, yet it is said to be difficult to rear in a garden. It varies a good deal as to size of foliage and flowers; the latter are pink with twisted anthers. The whole herb is required.

Geraniaceæ

The YELLOW TOUCH-ME-NOT (*Impatiens aurea*, and other American species of Impatiens) is used by the herbalists. It is sometimes called BALSAM WEED, but must be distinguished from GARDEN BALSAM (*Impatiens Balsamina*), a cultivated species; from COMMON or SWEET BALM (*Melissa officinalis*), a Labiate herb; and from another Labiate herb, BASTARD BALM (*Melittis Melisophyllum*). Confusion can only arise among the names.

HERB ROBERT (*Geranium Robertianum*), sometimes called Stinking Cranesbill, is an erect much-branched annual perhaps a foot high, bearing soft hairs, often turning bright red in all its parts and smelling unpleasantly when broken. It is abundant in Britain, and flowers throughout the summer. It has pale purple flowers streaked with fine lines of red. It must be distinguished from eleven other species in the genus Geranium, and from three somewhat similar plants in the kindred genus Erodium.

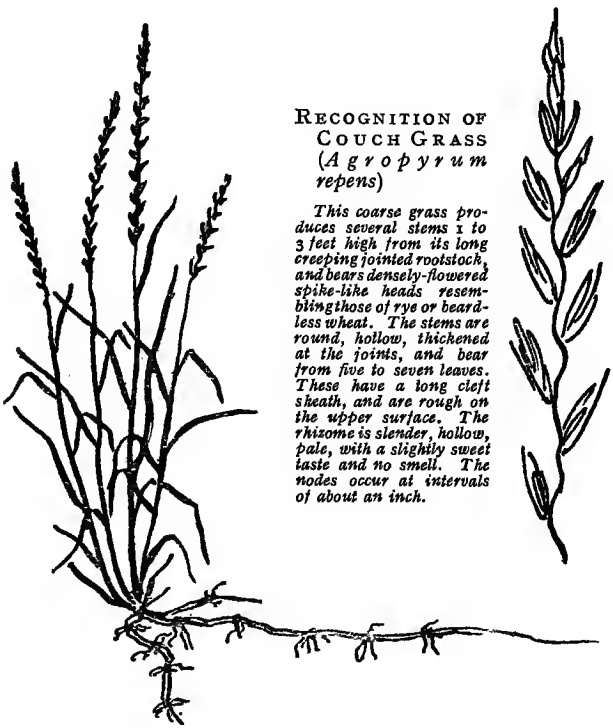
AMERICAN CRANESBILL (*Geranium maculatum*) is not a native of this country. The root is esteemed in herbalist medicine as an astringent.

WOOD SORREL (*Oxalis Acetosella*) is a beautiful little herb sometimes called Alleluia, because its white (rarely pink or purplish) flower appears between Easter and Whitsuntide. It is abundant in Britain, growing in masses in cool and shady places. It is believed to be the original of the Irish Shamrock, because of its pretty trifoliate leaves. These leaves fold down upon the stem in the evening, and remain firmly "closed" until next morning: it is they which are used for their refrigerant and diuretic properties in medicine. Twenty lb. of the fresh herb will yield 4 oz. of the oxalate of potash commonly known as salt of sorrel, used for taking the inkstains out of linen. The wild Wood Sorrel has crimson knotted stems, and its flower bells are streaked with hair lines of mauve. A yellow species of the same

plant with bronze leaves is sometimes cultivated in greenhouses.

Graminaceæ

The numerous grasses, which are true flowering plants, are spread over the whole world, from the tropics to the arctic circles. In temperate latitudes they form the principal carpeting of the soil; in very hot countries some species of one group, the BAMBOOS, attain the height of



RECOGNITION OF COUCH GRASS (*Agropyrum repens*)

This coarse grass produces several stems 1 to 3 feet high from its long creeping jointed rootstock, and bears densely-flowered spike-like heads resembling those of rye or beardless wheat. The stems are round, hollow, thickened at the joints, and bear from five to seven leaves. These have a long cleft sheath, and are rough on the upper surface. The rhizome is slender, hollow, pale, with a slightly sweet taste and no smell. The nodes occur at intervals of about an inch.

COUCH GRASS (*Agropyrum* [*or Triticum*] *repens*)

The rhizome or underground stem must be washed and dried and then stripped as clean as possible of the root fibres. It is finally cut up into short fragments less than an inch in length in a chaff-cutter. The stripping is a wearisome process, having to be done by hand: it should be entrusted to bevies of school-children, the appreciable price paid for couch by the ton making the returns worth while.

tall trees. The plants of this natural order produce the important food grains of the world, and support the grazing animals of all climes.

Wheat, Maize, Barley and Oats have all a value in medicine, principally because of their high content of starch, while Rye is the subject of the curious fungus known as Ergot (*Claviceps purpurea*), and Maize of another fungus possessing similar properties to Ergot.

It has been a matter of almost comic amazement to farmers to hear that COUCH (*Agropyrum repens*), the pest of their fields, is an important herb in the British Pharmacopœia, and that the washed and dried rootstock, chopped in a chaff-cutter for convenience, is in considerable demand, and is worth £40 to £60 per ton. As a rule they are only too glad to stack it in heaps, when cleaning the fields, and burn it without more ado. It is a little difficult to describe "Couch" among the many grasses, so that it may be identified. It exhibits eight to ten or more spikelets at regular distances on alternate sides of the flowering stem or spike, varying from 2 to perhaps 6 inches long. The plant is sometimes called TWITCH or QUITCH.

The SWEET VERNAL GRASS (*Anthoxanthum odoratum*) which gives the characteristic fragrance (of Coumarin), to new-mown hay, is official in homœopathy for hay fever. The "flowers" are the part required. Their perfume is due chiefly to coumarin. The flowers are distinguished from those of grasses in allied British genera by their characteristic scent, only one other British grass, *Hierochloe borealis*, having a similar odour, but it is so rare that it could not be mistaken for it. They occur in dense spikes tapering at both ends. The plant is a perennial and flowers from May to July.

Hypericaceæ

The herbs of this family are marked by most of them possessing oil glands in the leaves, which are either transparent, held up to the light, or are black and situated on the underside or the edges of the leaves, or on the flowers themselves. The family is confined in Britain to the genus Hypericum, consisting of eleven species. One of these (*Hypericum Androsæmum*) goes by the name of

TUTSAN or ALL-HEAL, which sufficiently reveals its herbalist history. The same name, All-heal, is appropriated to one of the Valerians, and to Woundwort, a Labiate herb; while three plants, Sanicle, Prunella and Bugle, are called Self-heal. The herb collector will be well advised in all these cases to use the botanical and not the popular name, to avoid confusion.

The whole herb, COMMON ST. JOHN'S WORT (*Hypericum perforatum*), a frequent plant in our hillsides and hedge-banks, is official in homœopathy. It should be gathered when in flower and seed. Its red terebinthinate oil was at one time official in the B.P. This oil, made effective by hanging for some months in a glass vessel exposed to the sun, is esteemed as one of the most popular and curative applications in Europe for wounds and bruises. The plant may be distinguished from its ten relations by its decidedly two-edged stem. The flowers are yellow with numerous stamens arranged in three bundles. The ovary has three dark-red styles. This species of St. John's Wort must not be confused with the large-flowered species usually seen in gardens, *Hypericum calycinum*, or Rose of Sharon, nor with the hairy-leaved species *H. hirsutum*, which has hairy round stems and paler flowers, not forming a level-topped cluster as in *H. perforatum*.

Illecebraceæ

RUPTUREWORT (*Herniaria glabra*). This is a much-branched plant which occurs in several counties of southern or central England. Its prostrate stems bear little green flowers in the axils of the small, opposite, rounded-oblong leaves. The whole herb, which has no scent, is used, and is sold at 1*s.* 6*d.* per lb.

Iridaceæ

The various Flags or Irises must be distinguished from *Acorus Calamus* or SWEET FLAG, a plant belonging to the Arum Family.

Many Continental species of Iris are cultivated in English gardens, and sometimes escape into neighbouring waste places. Only two Irises are naturally wild plants in this country: YELLOW FLAG (*I. pseudacorus*) and

FETID IRIS or GLADDON (*I. fœtidissima*). Neither is in much herbalist request at present.

"Orris root" is derived from the rhizomes of the Blue and some other species of Flag cultivated in gardens in this country.

These species are largely cultivated in Italy, a large export trade in the rhizomes being carried on. The roots are dug up in August, trimmed, peeled, and dried in the sun. The dealers who purchase them from the peasants separate them into different qualities.

(The ENGLISH IRIS, which varies in colour from white to dark purple, is *I. xiphioides*; the narrower-petalled SPANISH IRIS is *I. xiphium*, blue, yellow and white.) The AMERICAN BLUE FLAG is *I. versicolor*. It has a brown rhizome, and is used as a source of the active principle Iridin. "The American Blue Flag responds readily to cultivation when placed in a rich, moist, and rather heavy soil. It is readily propagated from divisions of old plants, which may be set 1 foot apart in rows spaced conveniently for cultivation. If the plants are set in August or September, the crop may be harvested about the last of October in the following year. The roots may be turned out with a deep-running plough, and after being thoroughly washed and the larger clusters broken up they should be thoroughly dried. Artificial drying at low heat is usually desirable.

"Yields at the rate of 3 or 4 tons of dried root per acre have been obtained from small plats. The price paid to collectors varies from year to year."—*U.S.A. Bulletin* 663.

The most important herb in this group of plants is the SAFFRON CROCUS (*Crocus sativus*). Until lately this flower was official in the B.P., the stigmas of the blossoms being the part used. English-grown Saffron is scarcely known at all in the market now. The drug is imported from the Continent, being largely cultivated in Spain, France, Austria, Italy and Greece. The flowers are collected at the end of September, the stigmas are quickly taken out, and promptly dried on sieves over a gentle fire for half an hour. From 7,000 to 8,000 flowers are required to produce 1$7\frac{1}{2}$ oz. of fresh Saffron, which is reduced in weight by drying. Although the produce commands a high price, many climatic difficulties attend the growing of Saffron on a sufficiently large scale. Its

cultivation in this country, up to about a century ago, originally gave the name to Saffron Walden in Essex. The stigmas are official in homœopathy. It is administered as a stimulant diaphoretic, but otherwise used as a colouring agent especially in Cornwall.

The SAFFRON CROCUS is an entirely different plant to the AUTUMN CROCUS (*Colchicum autumnale*, Liliaceæ), and to the SAFFLOWER or BASTARD SAFFRON (*Carthamus tinctorius*, Compositæ), a handsome annual herb from 2 to 3 feet high, cultivated for its flowers and seeds in Asia and Southern Europe, and used for dyeing silk and for adulterating the true Saffron. The flowers are considered laxative and diaphoretic in the herbalist system of medicine.

The Aromatic Pot-herbs of the Labiatæ

Many of the plants of the Labiate Family used as herbs in the kitchen, or as flavouring agents, yield the essential or distilled oils of perfumery and medicine.

One theory about the scented oils of flowers is that they are excreted not only to attract insects, but as a defensive measure against ruminating animals. They are among the substances like the alkaloids, and some of the resins, which serve to render the plants nauseous. Many flowers when dried lose their special scent or change it, and, mixed in the hay, are then eaten by animals who avoid them when fresh.

Few people who have not given themselves the pleasure of distilling flowers by means of a sufficiently simple apparatus, consisting of a spirit lamp or a Bunsen burner, a flask and a Liebig's condenser, have any idea of the rich stream of scented oil which comes flowing over in big gouts, floating on the condensed steam in the receiver. A distilled oil of this sort differs from a "fixed" or "expressed" oil, like the fixed oil of linseed, castor, or almonds, in that it leaves no greasy mark on paper. "Scent" consists of a selection of these choice oils dissolved in rectified spirit. Eau de Cologne and Lavender "water" are both spirituous solutions of volatile oils.

These oils are much used in medicine. Some of them are heavy, like oil of Wintergreen, and sink in water. One of them—oil of Mustard—is a powerful irritant, and

should only be used externally, and then only if largely diluted. Lavender, Chamomile, Dill, Caraway, Coriander, Juniper, the Mints, Roses, Rosemary and Mustard are all grown in this country for the sake of their volatile oils. Lavender is largely grown in Surrey and Herts, and a little in Kent.

Of the MINTS proper, eight species are enumerated in the Flora of Bentham and Hooker, although the varieties among these plants are extremely numerous, and many hybrids have been described by botanists. Several kinds of Mint have been used medicinally from the earliest times, but the chief of these at the present day are Peppermint, Spearmint, and Pennyroyal, all herbs found wild in this country.

The seeds, or cuttings, or root clumps of most of the pot-herbs can be obtained through seedsmen and nurserymen. The Mints are mostly inhabitants in the wild state of damp or marshy places.

PEPPERMINT (*Mentha piperita*) can be propagated by division of roots, or cuttings. These latter should be taken off when about 3 inches long, with a bit of root attached. They should be planted 6 inches apart either way, and cut in August when in bloom. The herb does best in a rather damp position. Fresh beds of it should be made yearly. The stems of Peppermint are usually purplish.

Japanese and Chinese peppermint, which yield Menthol, belong to other species, *M. arvensis* and *M. Canadensis*.

SPEARMINT (*Mentha viridis*) is much like Peppermint; the flower spikes, however, are less obtuse and more tapering. The leaves are sessile, elliptic, oblong and sharply serrate. Spearmint is the " Mint " of the kitchen garden. Several wild Mints have a Spearmint flavour, but less markedly so than *M. viridis*.

PENNYROYAL (*Mentha Pulegium*) is quite distinct in appearance. It is a prostrate herb with leaves much smaller than most of the other species of Mint. It must be cultivated for sale. It can be grown from seed or by division of roots. It does best in damp places and on heavy soil.

WILD MINT (*Mentha aquatica*) is used by the herbalists. It is abundant in Britain generally, and its " habit " is rather coarse and spreading, with flowers in dense terminal

globular heads, larger than those of the HORSEMINT (*Mentha sylvestris*), a herb resembling Spearmint. The latter has closely sessile leaves, small and numerous flowers, which appear rather late in the summer, in dense cylindrical spikes.

CATMINT (*Nepeta Cataria*) does not belong to the *Mentha* genus, but to *Nepeta*. It is an erect branching perennial, with rather small whitish flowers crowded in compact groups, forming short oblong spikes at the ends of the branches. It is tolerably frequent in the south and centre of England. It does well on chalky soil, and blossoms in August. The flowering tips are harvested when the plant is in full bloom.

GROUND IVY (*Nepeta Glechoma*) is the second of the two species of Nepeta. It is a hairy perennial with a creeping root, rounded crenate opposite leaves, heart-shaped at the base, and blue-mauve flowers in axillary whorls. It is found everywhere under hedges, on banks, and along the edges of woods and waste places. It should be collected in May.

CALAMINT (*Calamintha officinalis*), or BASIL THYME. A herb with broadly ovate leaves and pale purple flowers.

CLARY (*Salvia Sclarea*) is a cultivated herb with large heart-shaped leaves, covered with velvety hairs, and blue or white flowers. It has a strong aromatic odour.

WILD THYME (*Thymus Serpyllum*). This plant resembles Garden Thyme, but the leaves are broader, and not curved at the margins. The odour is weaker than in GARDEN THYME (*Thymus vulgaris*), an exotic variety from Southern Europe, mentioned in the B.P.C. It is grown from seeds in spring, or cuttings taken in March or April. It needs a warm position and good soil. New beds should be made annually. Self-sown plants will serve.

MARJORAM (*Origanum vulgare*) is much like the Thymes in odour, but it is a plant of taller growth with ovate leaves, and the arrangement of its flowers distinguishes it. WILD MARJORAM is to be found in calcareous localities: the SWEET MARJORAM (*Origanum Majorana*) of the kitchen garden is probably an East Mediterranean species. It can be grown from seed. It should be sown under glass in April, hardened off and planted out in May, 6 inches apart either way. It can be increased by division of roots; "but," say the H.G.A. instructions, "for any other than

home use, must be regarded as an annual." It should be cut when in flower.

The following herbs are exotics, not to be found wild except as escapes from cultivation:

SWEET BASIL (*Ocimum Basilicum*). This herb is of Indian origin. "Sow in gentle heat in March; harden off in May; plant in a sheltered spot 6 inches apart. Or sow in warm border in May thinly, so that transplanting will not be necessary. Must be treated as an annual."—*H. G. A. Instructions.* The taste of the plant is reminiscent of Tarragon.

ROSEMARY (*Rosmarinus officinalis*), a small shrub too well known to need description. This herb was introduced into England before the Norman Conquest. "The famous Hungary water," says Dr. Fernie, "first concocted for a Queen of Hungary, who by its continual use became effectually cured of paralysis, was prepared by putting 1½ lb. of the fresh tops of Rosemary, when in full flower, into a gallon of proof spirit, which had to stand for four days, and was then distilled." Rosemary enters into many hair washes.

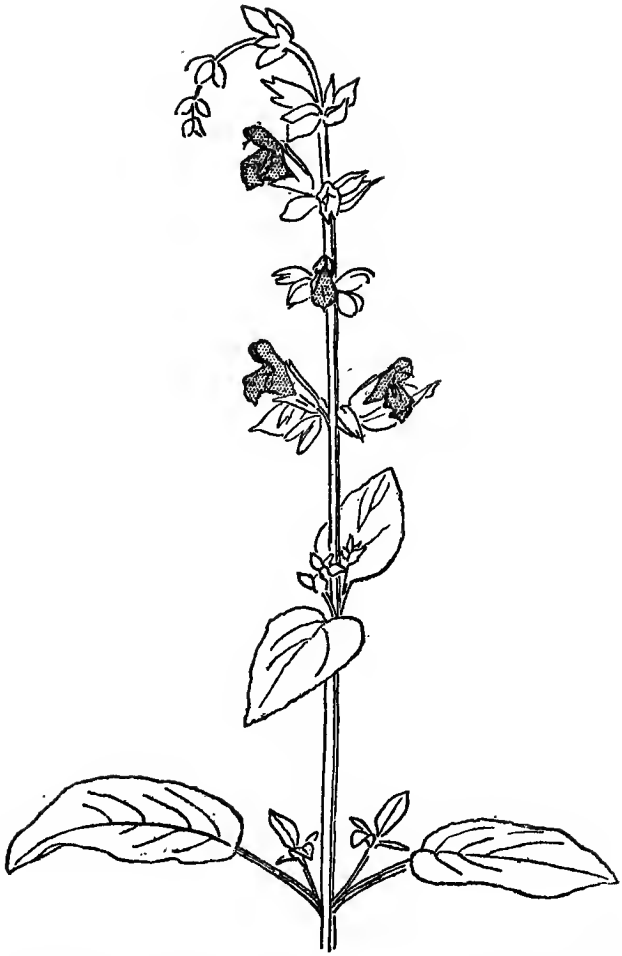
The labiate BALM (*Melissa officinalis*) must not be confounded on account of its name with the Balsam, or Yellow Touch-me-not of the Geranium Family. Balm is a perennial. It can be increased by division of roots in spring, or it may be grown as an annual from seed. It should be cut just before the flowers open. The herb is used as a diaphoretic and febrifuge, and in perfumery in the form of an essential oil.

HYSSOP (*Hyssopus officinalis*). Grow from seed; sow in April; thin to 1 foot apart. It does well in any dry soil and sheltered position. It is sometimes grown from cuttings, which should be taken in April.

The true LAVENDER (*Lavandula vera*) is a small shrubby plant of the mint family, native to Southern Europe, and widely cultivated for its fragrant flowers and for the oil distilled from the fresh flowering tops.

It is an easy plant to grow, cuttings striking very readily. The bushes enlarge and spread rapidly. The herb is official in the B.P.

"Lavender thrives best in light and rather dry soils well supplied with lime, but may be grown in almost any well-drained loam. On low or wet land it is almost certain



TYPICAL "LABIATE" HERB, GARDEN SAGE (*Salvia officinalis*)

Inflorescence "whorled."

Stem quadrangular, leaves "opposite," "oblong lanceolate," with "crenate" margins, and strongly marked veins on both sides. Corolla mauve, upper lip erect, concave, arched. Lower lip spreading, three-lobed.

to be killed in winter. The plant is not easily grown from seed, but may be readily propagated from cuttings or by division. In cold climates the plants must be well protected during the winter, or they may be carried over in a greenhouse or cold frame. Early in the spring the plants or rooted cuttings are set in well-prepared soil, 12 to 15 inches apart in rows spaced to suit the cultivation intended. Frequent and thorough cultivation is desirable.

"Not many blooms can be cut the first year, but full crops may be expected for each of the three following years, after which it will be best to start new plantings. The flowering tops are harvested when they are in full bloom, and if used for the production of oil are distilled at once without drying. If the dry flowers are wanted, the tops are carefully dried in the shade and the flowers later stripped from the stems by hand.

"On ordinary soil yields of 600 to 1,200 lb. per acre of fresh flowering tops have been obtained. The dry weight is about four-fifths of the green weight. The yield of oil varies widely, but from 12 to 15 lb. per acre may be expected under good conditions."—*U.S.A. Bulletin* 663.

Of Sage there are two wild species to be found in England: MEADOW SAGE (*Salvia pratensis*), a very rare plant confined to Oxfordshire and Kent; and WILD SAGE (*Salvia verbenaca*), a coarse perennial with small blue flowers in whorls of about six, forming terminal hairy spikes.

Salvia officinalis—the Sage of the kitchen garden—is grown from seed or by division of the roots in spring. Sow in April thinly. Each plant should have room-space of 15 inches each way. A fair crop of leaves may be harvested the first season, and a larger one for five or six years following. The woody stems must be rejected before drying: this remark applies in all cases where the leaf is the part of the plant required. Two varieties are grown as herbs. The "red" sage, with reddish leaves, is preferred to the green.

WINTER SAVORY (*Satureia montana*) is grown from seed annually. Sow in April in drills 1 foot apart. Thin to 8 inches in the rows. Cut when in flower. The blossoms of Savory are pinkish in colour.

WHITE HOREHOUND (*Marrubium vulgare*) is not a very common herb, although it is found in abundance in some localities, especially in Norfolk. It has stalked, round,

soft, much-wrinkled leaves, and small dirty white flowers in dense whorls or clusters in the upper axils.

The White Horehound of commerce has hitherto chiefly been imported from the south of France.

BLACK HOREHOUND (*Ballota nigra*) is a commoner plant, differently classified to the preceding, with purplish flowers and stalked ovate or cordate leaves, coarsely toothed. The plant is 2 to 3 feet high, softly hairy all over, and has a disagreeable smell.

The seed should be sown thinly in May in a prepared bed in the open. It takes a longer or shorter time to germinate according to the inclemency or mildness of the weather, but should sprout within three weeks. The herb may be transplanted when large enough to a permanent bed, or may be left to grow where sown. The whole herb of White Horehound is required by the herbalists, and should be gathered just before it comes into bloom. Large quantities only will be remunerative, because, although the plant is in demand, it does not command more than a few pence per lb. (The Water Horehound or Gipsywort belongs to another genus, and is not used in herbalism.)

Two non-stinging so-called "Nettles" belonging to the Labiates, WHITE DEADNETTLE (*Lamium album*), and YELLOW ARCHANGEL (*Lamium Galeobdolon*), are very well known herbs. The RED and SPOTTED DEADNETTLE (*L. purpureum* and *L. maculatum*) and the pretty little HENBIT (*L. amplexicaule*) are their immediate relations. *L. album* and *L. Galeobdolon* are both official in homœopathy. Neither need any description. Some modern writers on botany think that these innocent Labiate plants are so frequently to be found growing in the neighbourhood of the stinging Nettle because their likeness to it has served to protect them from browsing animals.

The BUGLE (*Ajuga reptans*), official in homœopathy, is a low little herb, with creeping leafy stems and purplish blue flowers, whorled in the upper axils of the leaves. It is abundant in pastures and woods, flowering in spring and early summer. White and pink varieties of Bugle occur, but are rare.

BUGLEWEED (*Lycopus Virginicus*) is an American relation of the only wild British species of Lycopus, the GIPSYWORT (*L. Europæus*).

BETONY. There are five species of plants in the Labiate Genus Stachys. *Stachys Betonica* is a downy perennial plant 1 to 2 feet high, found in woods and thickets all over England. The flowers, light purple in colour, are arranged in a spike, in dense whorls. Dr. Fernie says that notwithstanding a consensus of old-time herbalist praise, under chemical analysis Betony does not show itself to contain any special medicinal elements, other than the fragrant aromatic principles common to most of the labiates. The herb is still in some demand, however, and is collected in July.

WOUNDWORT (*Stachys palustris*) is a herb with tall stout stems, unpleasant smell, long lanceolate leaves cordate at the base, and pale bluish-purple flowers in whorls of six or eight. It is abundant in this country, being found near ditches and on moist banks. There are five species of Woundwort, which go by various names in different parts of the country, and have some slight value in the herbalist market.

CLOWNSWORT (*Stachys sylvatica*) (or Hedge Stachys) is a green, coarsely hairy perennial with an unpleasant smell. It has rather large stalked leaves, and dark reddish-purple flowers in whorls of six to ten distant from each other forming long terminal spikes. It is abundant all over Britain.

GROUND PINE (*Ajuga Chamæpitys*) is a low, much-branched, hairy annual, with yellow flowers, having an odour of turpentine, limited in range to some of the south-eastern or eastern counties of England. It is found growing on dry waste or cultivated places, chiefly on chalk or calcareous soils, and resembles no other British plant of the Labiate order. The leaves are used combined with those of other herbs in gouty complaints.

PRUNELLA or SELF-HEAL or HEALALL (*Prunella vulgaris*), is a common weed on banks and in pastures, with a creeping stem and ascending flowery branches with obtuse spikes of bluish-purple flowers. It blossoms during the summer and autumn. The entire herb is used.

As we have before remarked, several herbal Simples go by the name of Self-heal, more especially Sanicle and Bugle, as well as Prunella. This latter herb is also known as Carpenter's Herb, from its corolla when seen in profile being shaped like a bill-hook, and "therefore," says Dr.

Fernie, "on the Doctrine of Signatures it was supposed to heal wounds inflicted by edged tools," whence yet another name was found for it of Sicklewort. The herb was held in estimation among the Simplers as a vulnerary.

The COMMON SKULL-CAP (*Scutellaria galericulata*) is a weak, downy perennial, 8 inches to a foot high, with rather dingy blue sessile flowers occurring in axillary pairs, all turned to one side, along the greater part of the stem. It is fairly frequent in Britain, being found in wet and stony places. The LESSER SKULL-CAP (*S. minor*), a smaller species with pinkish flowers, is chiefly found in the Western counties. Dr. William Bramwell of Liverpool suggests (*British Medical Journal*, ii., 1915, 880), a trial of the American herb SKULL-CAP (*Scutellaria lateriflora*) in the treatment of epilepsy. He states that "in many cases a simple infusion or extract in correspondingly suitable doses will lessen the severity of the fits and reduce their number equally with bromides and without any of the disadvantages of the latter. Its efficacy appears to be partly due to its stimulating the kidneys to increased activity not only in increasing the flow of water but also the output of urea and uric acid, as shown by the increased specific gravity of the urine—the retention of toxins as a cause of many cases of epilepsy being too frequently overlooked. The medicinal qualities of this simple remedy are even more marked in chorea than in epilepsy, and it is to be hoped that a similar investigation and a similar therapeutic distinction awaits Skull-cap as happened in the case of Comfrey, the invaluable qualities of which were limited to the use of the herbalist, and consequently despised by the profession, until Dr. C. J. Macalister, wisely setting aside prejudice, determined to investigate it, and having discovered its cell-proliferating properties, due to the presence of allantoin, proved it beyond question one of the most valuable of remedies."

Skull-cap is collected in June. The English herb possesses similar properties to the American.

GERMANDER (*Teucrium Chamædrys*) belongs to the genus Teucrium. It is a perennial, with hairy stems and leaves, and reddish-purple flowers, found only in a few localities, or as an escape from gardens. This plant was "formerly," says the Rev. C. A. Johns (*Flowers of the Field*), "used

as a tonic, but is now scarcely used except by rustic practitioners. It is still, however, in some request."

WATER GERMANDER (*Teucrium Scordium*) has a velvety stem; the fresh leaves when rubbed have a faint smell of onions. It is a low branching perennial, with pale purple-red flowers turned to one side in whorls of six or fewer. It is a rare plant, being found only in a few Eastern counties and in Devonshire, and grows in wet places often partly submerged.

WOODSAGE (*Teucrium Scorodonia*) is an abundant herb with wrinkled downy leaves and pale yellow flowers arranged in pairs. This plant has been used as a substitute for hops. It should be collected in July.

MOTHERWORT (*Leonurus cardiaca*) is a coarse stiff downy perennial growing from 2 to 4 feet high, found in waste places in several parts of England. It has stalked leaves irregularly cut into coarsely toothed lobes, and pink or white flowers six to fifteen together in the characteristic Labiate whorls in the axils of the upper narrow "entire" leaves.

It will be noticed that the characteristics of the Labiate plants are their quadrangular stems, their opposite leaves, their whorled or paired inflorescences, the distinctive shape of their corollas, and the ovary divided into four parts.

To the enquiry so often made by people as to what herbs they had best grow in their gardens, many of the well-known pot-herbs in this list might be cited in reply. They are not difficult to raise, they all have a small market value, and are in culinary as well as medicinal request. The instructions for curing them are all much on the same lines, the important thing being the rejection of coarse stems, and the retaining of a good scent and colour. The herbs when dry should be tied in bundles of uniform size and length.

Note.—The camphor of commerce is what is known chemically as a "stearoptene" or solid volatile oil. It is derived from all parts of the camphoraceous tree called Nees, native to Japan, Formosa and China. Similar stearoptenes exist in some of the foregoing herbs; Menthol, derived from various species of Mint, is often called Peppermint Camphor. It is used in medicine as an antiseptic and local anæsthetic. Two sorts of Peppermint are grown on materia medica farms, one with

purple stems and one with green. The former yields the larger quantity, and the latter the better quality of Peppermint oil. This oil is an excellent remedy in catarrhal conditions.

THYMOL, another of the Stearoptenes, is contained in American HORSEMINT (*Monarda punctata*).

"Parsley camphor," or apiol, is derived from the volatile oil of the Umbelliferous plant Parsley, cooled to a low temperature; and Thymol is chiefly obtained from another Umbelliferous plant (*Carum ajowan*).

Leguminosæ

This Family forms, after the Composites, the most extensive of all the natural orders of flowering plants. It is easily recognised in British plants by the well-known peculiar form and arrangement of its flower petals, the Broom being a typical example, and in all cases by its podlike fruit or legumes.

RED CLOVER and LUCERNE are both extensively cultivated crops. The flower head of Clover and the entire herb of Lucerne are required. There are about twenty British species of Trefoil. The cultivated *Trifolium pratense* is the plant required by the herbalists. *T. repens* is also used in homœopathic medicine.

LUCERNE (*Medicago sativa*) is one of the six species of the Medick genus. It is given as an infusion, 1 oz. to the pint, to increase weight, and to enable the patient to put on flesh. It is also fed to cattle for the same purpose.

MELILOT (*Melilotus officinalis*) is a tall annual or biennial herb, with numerous bright yellow flowers in long axillary racemes. It is one of three species of Melilot, none of them very common in this country, and only found locally. FIELD MELILOT (*M. arvensis*) is also used. Unlike those of *M. officinalis*, its seed-pods are hairless. The herb is official in homœopathy. It is gathered in July.

The fresh and dried "tops" of the COMMON BROOM (*Cytisus scoparius*) are official in the B.P. The shrub is very common in dry, hilly and waste places in this country, flowering in the spring and early summer. The Broom must be distinguished from its near relations the Furzes of the Ulex group, and from the three species of Genista. It is quite different in character to the stiff spiny Gorse or

Furze (Ulex); its leaves, petals and seeds vary in shape and size from those of the Genistas; its stems are ribbed and almost angular (five-sided) instead of being round and smooth like those of the latter plants.

DYER'S GENISTA or GREENWEED (*Genista tinctoria*) has almost unbranched smooth round stems, ending in spikes of yellow papilionaceous flowers. The leaves are erect, lanceolate, hairless. It is a well-known, but local plant, about a foot high, growing in small tufts in meadows, in the greater part of England. It flowers early in the summer, and is said to enrich poor soils.

LIQUORICE (*Glycyrrhiza glabra*) is cultivated in materia medica gardens, but it is one of the few medicinal plants grown in England which are inferior to the imported drug. Spanish liquorice is sweeter than the English. The root is largely used, its preparations being official in the B.P. It should be *dug* in autumn, and be peeled before drying. The plant succeeds best in the rich soil of river valleys, and requires a warm climate.

GOAT'S RUE (*Galega officinalis*) is a familiar and easily grown garden plant. It should have plenty of room, and will do well in ordinary soil. The flowers are either purple or white in axillary racemes,* according to variety. They have little or no perfume.

Lichens, Algæ and Fungi

The Lichens, Algæ and Fungi of this country and its shores furnish many contributions to the stock of materia medica, but in a book for the herb collector it is not proposed to devote much space to them. It is not generally known that a comparatively small minority out of the enormous number of our native fungi are really poisonous; that we have not less than eighty different species which may be cooked, sent to table, and looked upon as palatable and nutritious articles of food. Fungi are dried for winter use on the Continent, and much esteemed as condiments in Germany and Austria.†

* "Raceme: an inflorescence in which flowers having stalks of equal length are arranged along a central stem, the lowest flower opening first."

† The reader interested in Toadstools and Mushrooms should read *British Edible Fungi*, by M. C. Cooke.

Of the Algæ or Seaweeds used in medicine, several of the larger brown seaweeds yield the element iodine. The kelp industry, which consists of the collecting and burning of these seaweeds, is an important one on the west coast of Ireland. Other seaweeds used are Bladderwrack, an anti-fat ; Irish " moss," a pectoral and demulcent, and Corsican " moss," a vermifuge. Cuttlefish bone, isinglass, sponge, agar-agar, are all materia medica derived from the sea.

The Lichens are not sufficiently important to the herb collector for more than a brief mention. Iceland " moss " is noticed in the B.P.C. These plants are immensely interesting to the botanist, but scarcely so in the present connection, although all those starred in the List are in use in medicine at the present time.

It is only recently that attention has been drawn to the absorbent and cleansing qualities of SPHAGNUM Moss (*Sphagnum cymbifolium* and other species), when used as a dressing for wounds in place of the familiar cotton wool. The great strain that has been put on the surgical dressings generally employed, since the outbreak of war, has compelled surgeons to look about for a substitute, with the result that Sphagnum Moss is being largely used for the purpose. The moss, of course, is properly prepared and sterilised. New works have been opened this spring in Edinburgh (not as a commercial undertaking, but merely to afford assistance in a good cause), where the moss is cleaned and treated. It forms admirable supporting pillows or even mattresses for cases where profuse hæmorrhage is difficult to arrest or likely to recur, and is an immense saving of hospital bed furniture.

Sphagnum Moss abounds in the Wye Valley, in the Lake District, in North and South Wales, and elsewhere, usually in water free from lime.

Liliaceæ

The bulb, characteristic of many plants of this Order, represents a storehouse of plant food garnered one year for the benefit of the plant of the next. Even when the flower has died down, the leaves continue to replenish the store in the bulb ; this is the reason why the latter should not be lifted until the leaves are also dead and have finished

their work against the coming of next spring. Many of the earliest blossoming flowers are liliaceous herbs—this underground harvest of food enabling them to anticipate other plants, and make their bid for insect favours while the rest are still growing up and exerting themselves to reach the blossoming stage.

Of the liliaceous herbs enumerated, the corm of Colchicum, the rhizome of Solomon's Seal, and the bulbs of Garlic and Onion will require some time to dry, and careful storing. Onion bulbs must be well ripened. While they are in the ground the tops should be bent over to enable the sun to do its work. A week or so later they must be dug up and allowed to lie on the ground in full sunshine for two or three days. They can then be taken away and spread out on the floor of a loft or dry shed and covered with a thick layer of straw. They need a particular amount of attention, as they decay rapidly, and all imperfect or soft bulbs should be removed from contact with the others. The same rules apply to the storing of all bulbs unless they are artificially dried. If dried in the evaporator, Onions (and other bulbs) should be peeled, cut into slices about ¼-inch thick, and dried from three to four hours at a gentle heat.

It may be as well to mention that a "corm" is not, properly speaking, a bulb, but an underground swelling of the stem. Only one "corm" is required in official British medicine—that of Colchicum—but many other plants, like Gladiolus and Cyclamen and Crocus, produce these underground swellings.

The herb grower need not perhaps concern himself with ASPARAGUS * and ONION, as he may find a better market for these things with the greengrocer than with the druggist; but GARLIC is being much recommended to the grower of medicinal plants just now, as its juice has been found to be highly antiseptic in the treatment of wounds. The medicinal preparations of Garlic juice are also used in pulmonary complaints. The Genus Allium comprises nine British wild plants, of which Crow Garlic and Ramsons are perhaps the most familiar.

The most important plant in the Liliaceous list of

* "Asparagin," found in the cell sap of asparagus, is mentioned in the B.P.C. as having diuretic properties. It has been used in Bright's disease.

"herbs" is the MEADOW SAFFRON, AUTUMN CROCUS or *Colchicum autumnale*, whose "corm" and whose seed are official in all three systems of medicine quoted in these pages. The herb grows wild abundantly in many places, and being poisonous to grazing animals, is cordially hated by the farmer. The "roots" of the Colchicum go so far down into the soil that, short of ploughing up the lands where it occurs, the only way to lift them is by the aid of a bulb planter. These corms should be collected from plants two years old, in July, after the leaves of the plant have faded and died down; but since the flower does not appear until August or September, there may be some difficulty in locating the plants until that time. The blossom resembles a purplish-pink Crocus, but differs in having six stamens, the Crocus having only three. At the time of flowering the plant exhibits no leaves, the brown corm (which averages in size that of a large chestnut) ending in a sheaf of scales clasping the stem. For use in the dried state the corm should be stripped of its coats, sliced transversely and dried at a low temperature. The drug is a specific in acute gout. Fresh corms are worth from 15*s.* to 28*s.* per cwt., and the seeds, which are very scarce (and should be collected when the capsules are ripe), are worth 170*s.* to 200*s.* per cwt.

To grow Colchicum from seed: When sown in pans, in boxes in a cold frame, or outside in a prepared bed of fine soil, any time from May onwards, the seed should be very lightly covered, and may not germinate until the following spring. The two-year-old plants should be transplanted 3 inches apart. The bulbs begin to flower when four or five years old.

The SQUILLS or SCILLAS, related to the Bluebells, are much grown in gardens at the present time. The medicinal Squill of official British medicine is a native of the South of Europe and of the Mediterranean shores. The B.P. indicates the species *Urginea Scilla* and *Urginea Indica*. The bulbs only are required. They are divested of their dry membranous outer scales, cut into slices and dried.

BUTCHER'S BROOM (*Ruscus aculeatus*) is a rigid dark green much-branched bush growing 2 to 3 feet high, with small greenish-white flowers occurring (apparently) right in the middle of the curiously-twisted "cladodes," leaflike branches—the true leaves forming minute scale

at the back. It produces red berries. It grows abundantly in some of the southern counties of England, blossoming in the early spring. The plant belongs to a North African genus, and is the only liliaceous shrub known in this country. The dried herb is sold at about 1*s.* per lb. It is a diuretic.

The entire herb LILY-OF-THE-VALLEY (*Convallaria majalis*) is marketable with the druggists as well as with the florists, being official in homœopathy and in veterinary work. It grows wild abundantly in some places, and is very local or altogether wanting in others. It should be gathered when in flower. The blossoms are dried on the "scape" or stem. They are sold at about 5*s.* 6*d.* per lb.

The bulb of the WHITE or MADONNA LILY (*Lilium candidum*), is used, and the writer knows of country people who steep the fresh blooms in spirit and find the resulting liquor an excellent lotion, like Arnica or Calendula, for bruises.

SOLOMON'S SEAL (*Polygonatum multiflorum*) is another beautiful garden plant required by the herbalists. Three species of Solomon's Seal are to be found in the wild state in this country, *Polygonatum multiflorum* among them. The plant is easy to grow. It does fairly well anywhere, but enjoys a rich soil and appreciates shade. It occurs in several parts of England, especially in calcareous districts in Berkshire, Hants, Bucks, Kent and Suffolk. The Whorled and the Angular Solomon's Seal are much rarer than the common one. The plant is too well known to need description, its white green-tipped flowers hanging from the underside of an arching stem, from which spring its fine parallel-veined leaves in pairs above, like wings. It produces berries of a dark hue, in some species blue and in others red. The dried rhizome is sold at about 1*s.* 3*d.* per lb.

The GREEN HELLEBORE * (*Veratrum viride*) is an American plant, not to be confused with the English Green Hellebore, a Ranunculaceous herb, also called Bear's Foot. It can be grown in this country, and has large stiff ovate leaves somewhat like those of *Gentiana lutea.*

HERB PARIS (*Paris quadrifolia*) official in homœopathy, is found in calcareous woods and shady places scattered over several parts of Britain. It stands about a foot

* See HELLEBORE (*Ranunculaceæ*).

high; has broadly elliptic leaves and a curious splay-petalled greenish flower rising on short peduncles in the centre of a ring of leaves. Sometimes there is a fifth leaf, with the addition of a fifth or even a sixth to each of the parts of the flower. The entire herb is used.

The TIGER LILY (*Lilium tigrinum*) is official in the Homœopathic Pharmacopœia.

Linaceæ

Of the many Flaxes two species are used in medicine.

MOUNTAIN FLAX (*Linum catharticum*) is used as a purgative in herbalist medicine.

LINSEED (*Linum usitatissimum*) yields Linseed oil (expressed) and Linseed meal used for making poultices. It is official in the B.P. The seeds boiled whole yield a demulcent mucilage used for coughs.

H. G. A. Instructions:

"This had best be treated as a farm crop. It succeeds best on deep moist loam, in good condition. It needs to be sown on clean land; firm not loose, neither poor nor freshly manured. For these reasons it follows well on a root crop. It is a quickly grown, quickly harvested crop, so is profitable in this way, that it may be grown after winter roots are gone, and is reaped in time to allow of a catch crop following. Russian seed is best if procurable; or Dutch-grown of Russian origin. Sow in drills—70 lb. to the acre. Damp injures the seed; if not used at once it must be kept dry. Sow in May. Keep clear of weeds. Hoeing or hand-weeding to be done after rain, or the shallow-rooted flax will be disturbed. It should be reaped in August before the seed is dead-ripe. Tie in small sheaves that drying may be rapid, then carry without delay. Threshing of moderate quantities can be done with a flail; or a mangle can be used, which breaks the fruits, and then the seed is knocked out. Care should be taken, in any case, not to injure the straw, which will fetch a good price."

Part used—seed.

Purging Flax, or Mountain Flax, unlike Linseed with its well-known blue flowers and alternate leaves, is a very slender plant about 8 inches high, with opposite leaves and small white blossoms. Cultivated Flax (*L. usitatissi-*

mum) must be grown either for seed or for fibre, but not for both products.

Loranthaceæ

The MISTLETOE (*Viscum album*), which is to be found growing on many other trees besides the oak, has had quite a reputation among apothecaries in its day, and is still used in homœopathic practice. But it is one of the many plants in this enumeration for which no collector would be well advised to search unless a market was a certainty. It is mentioned in the *Extra Pharmacopœia* among drugs of secondary importance, the berries being said to act as emetics and purgatives. The American Mistletoe, also used in herbal medicine, is a different species, *Phoradendron flavescens.*

Lycopodiaceæ

The CLUB-MOSS (*Lycopodium clavatum*), official in homœopathy, comes of a large genus of plants widely spread over every part of the globe. It is a perennial with a branched usually creeping stem, with minute hair-tipped leaves, and the spore-cases are borne on club-shaped branches. There are five British species of Lycopodium. The drug of the British Pharmaceutical Codex consists of the spores of *Lycopodium clavatum,* found in hilly pastures and mountain heaths at an altitude of 1,000 to 2,000 feet, more commonly in the north of Britain than elsewhere. It scatters this yellow dust in great profusion. It is obtained in July and August by shaking and beating the spore-bearing branches and sifting the powder. It is often adulterated with starch and other substances, but adulteration can always be microscopically detected. Lycopodium is very light and floats on water without being wetted. A tincture made from this powder is used internally by the homœopaths. Dr. Fernie has many interesting facts to record about it.

The AMERICAN GROUND PINE (*Lycopodium complanatum*) is another species. It has an aromatic odour and possesses properties similar to those of Club-moss. (The European "Ground Pine" is a Labiate plant.) See *Ajuga Chamæpitys.*)

Malvaceæ

The Mallows possess no unwholesome properties like the acrid Buttercups, but abound in the soft mucilage which once made "Althea" (MARSH-MALLOW) official in the B.P. This Althæa is still much used as a useful pill excipient, so that the herb is in demand and cultivated on materia medica farms. French druggists are supposed to prepare their famous "Pâté de Guimauve" from this root, which is largely cultivated in France, Belgium and Germany. The root is collected in autumn from plants not less than two years old, and yields four preparations official in the United States Pharmacopœia.

The COMMON MALLOW (*Malva sylvestris*) must be distinguished from MARSH-MALLOW (*Althæa officinalis*). The plants belong to different genera. The former, a biennial, is a well-known ubiquitous herb with roundish leaves and mauve scentless flowers which blossom all the summer. The latter, a perennial plant, is not so common; it is only found in marshy places, usually near the sea; it flowers in August, and the whole plant is covered with a soft dense velvety down. The herb constitutes a popular remedy for coughs and bronchitis, generally in combination with other ingredients. The roots should be collected in autumn from plants two years old, carefully washed, scraped and dried. The Marsh-mallow would be worth the grower's attention.

"ALTHÆA will grow well in almost any loose garden soil of moderate fertility, but tends to die off in situations where the ground freezes to a considerable depth. The plants may be propagated from seeds or from divisions of the old roots made early in the spring. The seed may be sown in the open in shallow drills at least 3 feet apart, and the seedlings should be thinned to stand 16 inches apart in the row. Under good conditions the plants attain a height of 3 or 4 feet; therefore close planting does not give sufficient room for full development.

"In the second year of growth the roots are harvested, washed, peeled, cut into short lengths, and thoroughly dried. Yields at the rate of 800 to 1,000 lb. of dry root per acre have been obtained."—*U.S.A. Bulletin* 663.

The HOLLYHOCK (*Althæa rosea*) a well-known garden plant, is a Mediterranean species. The flowers are used

in herbalist medicine. They should be picked from the spike and carefully dried. The corolla freed from the calyx is the part required. The deep purple flowers are preferred, and are sold in France under the name of "Roses Cremières."

Orchidaceæ

Of this fantastic and extraordinary Order we have perhaps forty or forty-five small wild representatives in Great Britain and Ireland. The Fly, Marsh, Butterfly, Musk, Frog, Spotted, Green, Bee and Dwarf Orchis are all wild plants in the districts where they are to be found. In herbalist medicine the nutritive product from the root of the EARLY ORCHIS (*Orchis mascula*) and other species is held in repute, the dried root being known as "Salep." This species is widely distributed over Britain, being found in moist woods and meadows, and blossoming early in the spring. It has numerous showy purplish blooms in a loose spike from 3 to 6 inches long.

Papaveraceæ

The brilliant red petals of the FIELD POPPY (*Papaver Rhœas*) are used as a colouring agent in official British medicine. It might be worth while for a troop of Boy Scouts or the children of an orphanage, under proper supervision, to undertake the "weeding" of some of those fields or fallow tracts of land over which these poppies cast a crimson carpet in the early summer. A harvest of this sort would result in profits acceptable enough to the youthful workers.

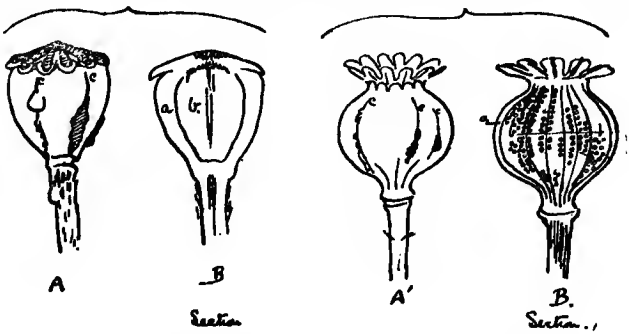
"Children can gather the petals," says Leaflet 288, "placing them in a linen bag suspended round the neck, leaving both hands free for the work . . . they might be a positive help in preventing the spread of this cornfield weed," if they pulled up the plants as well.

The OPIUM POPPY (*Papaver somniferum*), a white or purple flower with large grey-green, simple, toothed leaves, is a beautiful and familiar garden plant. It can be grown in this country for medicinal purposes, but the drug opium (yielding morphine and all its valuable salts) has hitherto been collected in Europe rather as a matter of experiment than of commerce. The poppy heads or capsules are sold entire. They should be collected when the fruit is nearly

ripe. *Papaver somniferum* is an annual plant. It is not English, but has assumed the appearance of a wild plant in many parts of the country,

Leaflet No. 288 thus speaks of the Poppy and its culture:

"*Prospects.*—The white variety of the Opium Poppy is still grown in several parts of the country, notably Lincolnshire, for the sake of its capsular fruits. The crop is always a precarious one, but there is a steady market for poppy heads. Belgium has usually supplied a proportion of the poppy heads used in this country, but not sufficient for the loss of her crop to cause serious shortage on the British market. The price paid for poppy heads is nor-



OPIUM POPPY (*Papaver somniferum*). Fruit

Capsules of a species of garden poppy and of (A' B') the "Opium Poppy," ripening, showing the incisions (c) made for the exudation of the juice (opium). This flows out readily as a cream-coloured liquid with a characteristic narcotic smell. It soon dries a dark brown colour and becomes of a gummy consistency, when it can be scraped off with a knife and collected. The incisions in the capsule should not penetrate the wall (a in the section drawings), so as to reach the seed cavity (b). Opium is not collected in commercial bulk in this country; but the dried hemispherical depressed capsules of "Papaver somniferum" are marketed.

mally 12*s.* to 15*s.* per 1,000 for large size, and 8*s.* to 10*s.* for medium. Present prices are rather higher.

"*Cultivation.*—Poppies prefer rich, moist soil with plenty of sun, and the usual practice is to take a crop after wheat, oats or barley. The land is manured and ploughed in autumn to ensure a fine tilth in spring. Sowing is done at the end of March or in April according to weather, allowing 1 lb. of seed per acre and drilling in rows a foot apart. The whitest seeds are preferred. Plants which are too forward are liable to be cut down by late frosts, while, if seed is sown too late, the seedlings may become

dwarfed if dry weather sets in before they become well established. A light roller is sufficient to ensure the seeds being covered.

"When the plants are 3 or 4 inches high they are cut with a hoe into clumps about 6 to 9 inches apart, and are afterwards 'singled' by women or children, leaving a solitary strong plant from each group. Weeding is necessary. A dressing of soot may be given if support appears to be needed.

"Poppy heads of pale colour are most desired, but a week's rain or even a few nights' heavy dew may spoil the colour of the ripening fruits. High winds and heavy rains are dreaded, as the plants become top-heavy. The capsules are harvested by women or children about September; they are broken off and placed in baskets, and are transferred to sacks to be conveyed to the drying floor. The yield is very variable. The drying floor is a boarded floor in a freely ventilated warehouse, and on it a thin layer of capsules is turned each day by shuffling the feet along the floor. The capsules usually take a fortnight to dry."

The GREATER CELANDINE (*Chelidonium majus*) must be distinguished from the little ranunculaceous plant "Lesser Celandine," with which it has nothing in common but the name. [Again, the LESSER CELANDINE is sometimes called "Figwort," and another totally different herb, *Scrophularia nodosa*, is also so named. As all of these are used in herbalist medicine and are asked of herb collectors, the beginner in that career must be quite clear in his or her mind about them.] *Chelidonium majus* is a widespread "weed" frequently found in the neighbourhood of houses. It has erect, slender branching stems about 2 feet high, full of a yellow juice, which is a popular remedy for warts. It has been also suggested as a remedy for cancer and liver disorders, and is used in homœopathic medicine. Its leaves are once or twice cut in the manner described by botanists as "pinnate," utterly unlike the rounded "entire" leaves of the Lesser Celandine. Its flowers, again, are small and yellow, three or six together in a loose umbellate cluster on a long stalk. The herb is sold at about 1s. per lb.

FUMITORY (*Fumaria officinalis*).—A delicate pale green annual with small rose-coloured flowers tipped with purple,

and leaves remarkably like those of the garden Eschscholzia in miniature. It usually forms, when it begins to flower, a dense tuft of a few inches in height. In some species the prolonged stems become weak or trailing, or climbing. It is found abundantly in cultivated and waste places, decreasing in the north. The herbal Fumitory is always a "weed," although instructions may be found in some of the gardening manuals for the cultivation of its immediate relative, the NOBLE FUMITORY (*Corydalis nobilis*). The well-known garden Dielytra is a North American species of a genus of the Fumitory family. Culpepper has, as usual, a long list of curative virtues to ascribe to Fumitory. "If by my astrological judgment of diseases," he says—and he always insists on this—". . . you find Saturn author of the disease . . . you may by this herb prevent it." Some of Fumitory's medicinal reputation has survived to-day, and the drug is sold at about 1*s.* per lb.

Passifloraceæ

The PASSION FLOWER (*Passiflora incarnata*) is official in homœopathic medicine, but, like some other herbs and plants, Tiger Lily, Cyclamen, Magnolia, etc., is only mentioned here for the sake of completeness. These cultivated plants are quite familiar to English people, but do not come properly into the herb collector's ken. The drug derived from the Passion Flower, used with bromides, is said to be of great service in epilepsy.

Plantaginaceæ

GREATER PLANTAIN (*Plantago major*). There are five species of Plantain, of which the Greater Plantain is familiar enough to all country folk. It is found everywhere, but varies much in size, the spike of flowers—which bloom all the summer from May onward—measuring from 2 to 6 inches in length. The fresh leaves, rubbed on parts of the body stung by insects and nettles, will allay the irritation like those of Dock.

Polygonaceæ

The British Docks are all perennials. They vary so much in appearance that it is difficult to fix the limits

of the species. They can seldom be distinguished from each other without the fruiting perianth (the flower spike) from which most of the characters of identity are taken.

SMARTWEED (*Polygonum Hydropiper*) (sometimes called Water-pepper) is found in wet ditches; it has slender drooping spikes of flowers and is a herb biting and acrid to the taste. The amateur herb collector will require to have this and other species of the genus specially identified for him unless he is to make mistakes among them. It is said that Smartweed is sometimes used by farriers for curing "proud flesh" in the sores of animals. It is also sometimes required in hydropathic institutes for baths.

BISTORT or SNAKEWEED (*Polygonum Bistorta*) is a handsome perennial plant occurring in circular patches in moist meadows and pastures. It has large ovate-lanceolate leaves tapering to a lengthy stalk, sometimes 6 inches long, and stems about 2 feet high terminating in a single dense cylindrical flower spike of pinkish "blossoms." It is sometimes cultivated in gardens for the sake of its astringent medicinal rhizome. The drug is used in hæmorrhage.

KNOT-GRASS or KNOTWEED (*Polygonum aviculare*) is a much-branched wiry annual, prostrate when in the open ground, erect when drawn up amongst corn or grass, often a foot or two long" (Bentham and Hooker). It is found everywhere, and flowers the whole season. The herb will be familiar to bird lovers, who are accustomed to pick it, like Groundsel, for their caged pets, but others may require to have it pointed out. The druggists specialise "RUSSIAN" KNOT-GRASS (*Polygonum erectum*), but the English herb is said to have similar medicinal properties. The drug has been recommended for treating diabetes. There are several varieties of this herb. It has small axillary greenish-white flowers, and tubular chaffy stipules surrounding the stem.

SHEEP SORREL (*Rumex Acetosella*).—This little plant is an abundant field weed in Britain. Like those of all the rest, the individual flowers are inconspicuous, small and greenish, becoming red when in fruit, and borne in leafless whorls—in a slender terminal "panicle."

WATER DOCK (*Rumex aquaticus*).—This large-leaved herb is confined to the north of England. It is distinguished by the absence of a tubercle on the fruiting

perianth. *Rumex crispus* has long narrow leaves much curled at the edges. It is found abundantly on roadsides, in ditches, pastures and waste places throughout the country. The roots are sold at 10*d.* per lb.

BROAD-LEAVED DOCK (*Rumex obtusifolius*), again, differs from the Yellow Dock principally in its more robust habit of growth. It grows to about the same height, but its stem is stouter, and the leaves, which are wavy along the margin as in the Yellow Dock, are much broader and longer. The lower leaves have long stalks, and are from 6 to 14 inches in length, with heart-shaped or roundish bases, while the upper ones are from 2 to 6 inches long and are on short stalks.

The Docks generally seem to be esteemed in "rustic medicine." Most of them furnish "rumicin," a substance useful in several chronic diseases of the skin. Other species might be mentioned, but only the roots of those here enumerated are likely to be marketable. An ointment made with fresh Yellow Dock root is an excellent substitute for the official Ung. Chrysarobini.

The so-called ENGLISH RHUBARB (*Rheum rhaponticum*) is a native of southern Siberia. The first plant was raised in this country about 1628, and the herb is still largely cultivated at Bodicote, near Banbury, for medicinal purposes. The garden Rhubarb ought to be avoided as a food by gouty people.

The foreign drug is derived from species of Rheum native to China and Thibet. *Rheum officinale*, also cultivated at Bodicote, is a striking plant with a tall loose inflorescence of white flowers, 7 to 8 feet high.

The roots of these plants should be six or seven years old before being dug. They are deprived of the cortex and dried. In commerce they occur in large irregularly formed pieces, the surface often covered with yellowish brown powder, with a strong characteristic scent. There are some gigantic Docks and Rhubarbs to be seen in the Materia Medica gardens at Regent's Park which give an imposing idea of this group of plants. They are in flower in May and June.

Rhubarb Growing.—One-year-old Rhubarb seedlings may be planted out in January in exposed, rich, deeply dug ground, each about 2 inches deep and 18 inches to 3 feet apart either way. These plants will be ready for pulling

from Christmas onwards, but they should not be much cut or forced until the second year. Old clumps of Rhubarb can be planted close together under the staging in a warm greenhouse towards the end of October, when they will be ready to cut for the table in about six weeks.

Primulaceæ

COMMON or YELLOW LOOSESTRIFE (*Lysimachia vulgaris*) is a fairly well known stout erect branched herb, some 3 feet in height, with runners, whorled leaves, and terminal yellow flowers. It blossoms in July and August by the side of streams and lakes. (The Purple Loosestrife is a totally different plant belonging to the Lythrum Family.) There are four or five British species belonging to the genus Lysimachia, which includes Yellow Loosestrife, all of which have yellow blossoms, so that the astringent and expectorant drug of herbalist medicine, *Lysimachia vulgaris*, must be distinguished.

The well-known little RED PIMPERNEL (*Anagallis arvensis*) needs no description. It is a common "weed" of cultivation, and has accompanied man in his movements over a great part of the world. The flowers are scarlet, and the leaves dotted beneath. The herb yields an extract which has a narcotic effect on animals: a homœopathic tincture is prepared from the flowers. (It might be noted that this Pimpernel has nothing to do with the genus Pimpinella of the Umbelliferæ.)

PRIMROSE (*Primula vulgaris*). Calls for no comment. A tincture of the whole fresh plant in bloom has been used in cases of restlessness, sensitiveness and insomnia.

COWSLIP (*Primula veris*). Also well known. The whole plant is gently narcotic. Mrs. Beeton gives the recipe for making cowslip wine which costs about 2*s*. 9*d*. per gallon, exclusive of the flowers, or "pips" as they are called, which may be picked in the fields in spring.

The CYCLAMEN EUROPÆUM is official in homœopathy. The wild plant met with in Kent and Sussex and called Sow Bread is probably an escape from gardens.

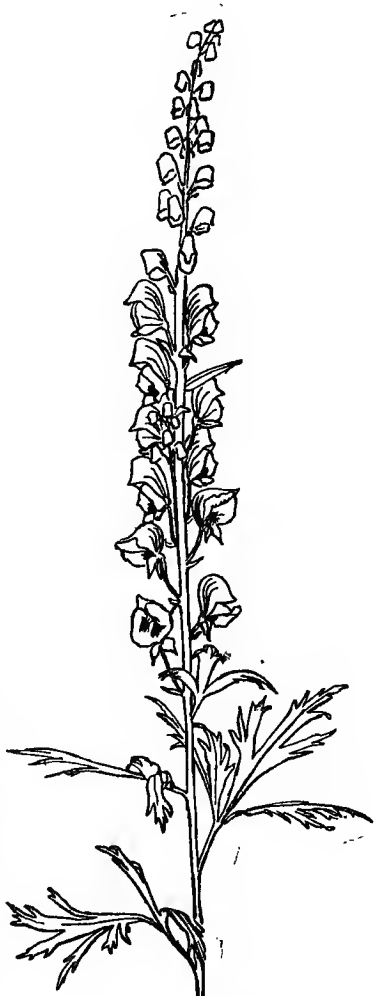
The Cyclamens are greenhouse plants which require to be treated as annuals—that is to say they should be raised from seed every year, the old plants being discarded after flowering. If, however, it is desired to grow the

"corms" a second year, these should be re-potted and kept somewhat close and moist, but without too much water. The corm is required by the druggists when it has attained about the size of a small chestnut.

The Ranunculaceæ or Buttercup Family

This is an extensive Order of plants represented in the British flora by about thirteen families. It is characterised by the acrid nature of its juices.

From the herb grower or collector's point of view the ACONITE (*Aconitum Napellus*), otherwise called Monkshood or Wolfsbane, is the most important member of the family. It is a well-known, very characteristic plant, growing about 2 feet high, with handsome dense spikes of deep blue flowers, each one with its bold helmet-like sepal at first concealing the lateral parts of the blossom. [The Monkshood must be distinguished from another plant with a yellow blossom, called WINTER ACONITE (*Eranthis hiemalis*).] *Aconitum Napellus* grows wild in some shady spots in Hereford, Monmouth,



ACONITE (*Aconitum Napellus*)

Derby, Devon, and Somerset. It is official in most systems of medicine, and is carefully cultivated on materia medica farms. Other non-British species of Aconite furnish roots used by the druggists.

Leaflet No. 288 gives the following directions with regard to its cultivation:

"Aconite can be raised from seed, but it takes from one to three years to flower. It can also be propagated from the smaller roots which develop from the sides of old roots. The plant likes a moist loamy soil, slightly retentive of moisture, and it should be grown in the shade. The beds should be well dug beforehand, pulverised by winter frosts, and enriched with leaf or stable manure. The seeds can be sown in the open any time from April to August. The seedlings should be pricked off as soon as they are large enough, and transplanted, if they have been raised in boxes, to their permanent quarters. Aconite is a hardy subject, and succeeds better sown out of doors than under glass. A great disadvantage of growing the herb from seed is the uncertainty as to the correctness of the species, so that the better method is to obtain the roots. By this method, of course, hybridization is avoided. The roots should be planted out about a foot apart each way, in December or January, when the young shoots should appear above ground in February. Each root is biennial, but as it has the power of forming new ones every year the plant itself is perennial. Where Aconite grows wild, as it does luxuriantly in some districts, it would yield returns with little further trouble than weeding, digging up, and drying. In this case the herb need not be grown, but merely collected. Hitherto the cultivation of Aconite has not paid well in this country. The cultivated root is worth four times the price of the wild root, and is sold at about 1*s.* a lb. dried. It should be firm in texture and well shaped, a brownish-black tapering root." It should not be hollow or spongy, like an old radish, or retain any portions of the stem. This root is sometimes confounded with Horseradish root, but is really quite distinct from it, being tapering, smaller in size, and brown instead of cream-colour."

The leaves and flowering tops one-third expanded are required in homœopathy, and the dried root in allopathy.

Four species of BUTTERCUP are official in homœopathic

medicine. There are many species of Buttercup in the genus Ranunculus, so the collector must take care to distinguish *R. ficaria*, *R. sceleratus*, *R. acris*, and *R. bulbosus*

PILEWORT (LESSER CELANDINE) (*Ranunculus Ficaria*) is one of the earliest blossoming of spring flowers. It is found everywhere in fields and pastures, on shady banks and in lanes, and once identified, can never be mistaken for any of its relations. It is easily distinguished from the other Buttercups by having eight or nine petals instead of the usual five; and its leaves, instead of being much cut and segmented, are heart-shaped, thick, smooth and shining.

CELERY-LEAVED BUTTERCUP (*Ranunculus sceleratus*) is an erect, much-branched annual, without much down or hairiness about its stem and foliage. Its flowers are small and numerous, and it is found chiefly on the sides of wet ditches and pools.

CROWFOOT (*Ranunculus acris*) is a very variable plant in size, but generally one of the tallest of the Buttercups. It is a softly hairy perennial with large bright yellow flowers on long terminal stems (peduncles). It blossoms from the early summer until autumn.

BULBOUS BUTTERCUP (*Ranunculus bulbosus*) is a perennial smaller and more hairy than the preceding species, but with equally bright flowers. It is distinguished from all the foregoing Buttercups by the sepals, which, as soon as the flower expands, are closely turned down upon the stalk, and by the bulbous base of the stem.

KINGCUP or MARSH MARIGOLD (*Caltha palustris*) is found in marshy places, and along the borders of streams. It has large bright yellow flowers. It forms large tufts, and blossoms early in the spring, often lasting well on into the summer.

The seeds of *Delphinium Staphisagria*, a Continental species of Larkspur, are official in the B.P. The LARKSPUR cultivated in English gardens is only half-hardy, dying in frosts. The black seeds are required of *Delphinium Consolida* (Larkspur).

COLUMBINE (*Aquilegia vulgaris*) a wild flower much cultivated in gardens; the root of PÆONY (*Pæonia officinalis*), a plant not indigenous to this country, but also cultivated in gardens; and the beautiful PASQUE FLOWER (*Anemone Pulsatilla*), found in several open

chalky, calcareous districts in England, are required by the herbalists.

The Pasque Flower is to be distinguished by its large solitary blossom, silky violet-coloured sepals, and long feathery awns, from the common and better-known WOOD ANEMONE (*Anemone nemorosa*). To cultivate, the Pasque Flower is a hardy perennial, but the "seeds" (more correctly achenes), must be planted as soon as they fall off. They should be separated thoroughly by well mixing with sand or dry soil, otherwise their long feathery awns will prevent them being sown properly. They should be set outside from April to August, very lightly covered with soil, made firm, watered lightly, and kept quite shaded from the sun until the seedlings appear. FIELD ANEMONE (*Anemone pratensis*) is a Continental species also used in herbalism. It has smaller, deeper purple sepals, reflexed at the tips.

SETTERWORT or FETID HELLEBORE (*Helleborus fœtidus*) is found wild in Hampshire and Sussex and a good many other counties. It flowers in the early spring. Its drooping pale green blossoms with a purplish tip are unmistakable. The fresh root is used by the homœopaths.

The rhizome (or root) of BLACK HELLEBORE or WHITE CHRISTMAS ROSE (*Hellebore niger*) is used. This plant, which is only found in gardens in England, is in blossom from December to February, and the fresh root, from which a homœopathic tincture is made, should be dug just before this period. The founder of the Homœopathic school of medicine, Hahnemann, said that at least one-third of the cases of insanity occurring in lunatic asylums might be cured by the careful and proper administration of the tinctures prepared from the roots of the Christmas Rose. The plant, however, is a somewhat difficult one to grow. As soon as ripe the seeds should be sown in boxes of sandy soil, about $\frac{1}{8}$-inch deep, from February to September. They are sometimes several months in germinating. They should not be exposed to the full sun, but kept moist without constant watering, and given a north aspect.

[*Note.*—The AMERICAN GREEN HELLEBORE (*Veratrum viride*) belongs to the Lily Family. It is a marsh plant of the North United States, Canada, and Alaska. It is closely allied to WHITE HELLEBORE, the root of which is imported

in bales (principally from Germany at one time), and is used internally as a powerful emetic and purgative, and externally as an irritant.

The English GREEN HELLEBORE, or BEAR'S FOOT (*Helleborus viridis*) is a ranunculaceous plant not mentioned in the herbalists' lists. Two species of Helleborine are Orchids. Only the AMERICAN GREEN HELLEBORE (Liliaceæ), WHITE HELLEBORE (Liliaceæ), the SETTERWORT (*Helleborus fœtidus*), and the BLACK HELLEBORE (Ranunculaceæ), are used in medicine.]

ADONIS (*Adonis vernalis*) is sometimes called False Hellebore. It is not a native of these islands. The flowers are large and yellow; the leaves, like so many others of the whole Family, are finely divided into numerous narrow linear segments. This is to allow the plants to compete with the surrounding grass for air and sunlight. The medicinal principle of *Adonis vernalis* resembles Digitalis in its action, but is said not to be cumulative in its effects.

The somewhat famous American herb, GOLDEN SEAL (*Hydrastis Canadensis*), tonic, laxative, alterative, detergent, belongs to the Family Ranunculaceæ. It is grown by experts with great difficulty in this country, and is not recommended to the attention of beginners. It requires a situation of rich moist woodland, with plenty of shade.

Rosaceæ

The Rose Family is largely represented in the Pharmacopœias and herbals, although only four plants out of the nine official in the B.P. are grown in England. They are the domestic Prune, the Cherry Laurel, the Damask and the Red Rose. Roses are cultivated for medicinal use on most of the materia medica farms in this country, in Oxfordshire and Derby, in the south of France, and round Hamburg in Germany.

AGRIMONY (*Agrimonia Eupatoria*). This is a totally different herb to the Hemp Agrimony of the Order of Composites. The tall spike with yellow flowers, and hairy pinnate leaves, of the Rosaceous Agrimony is well known to all country folk. It blossoms throughout the summer. It is a somewhat variable herb in "habit," *i.e.* in the height to which it grows, the hairiness of its foliage, size of its flowers, etc. The herb should be collected in August.

These leaves are often 6 inches long, and are described in botanical language as being "interruptedly pinnate," that is, they have from five to nine coarsely-toothed leaflets springing from either side of the midrib intermixed with a number of much smaller ones. Agrimony is in sufficient demand to be worth cultivating at present. The plant is perennial.

AVENS (*Geum urbanum*) or HERB BENNET or GEUM. This is a well-known wild and garden plant with leaves somewhat like those of Agrimony, and yellow flowers with small spreading petals. The whole herb, stem, leaves and root, is required, and should be gathered in July. The root has a fragrance like that of Cloves, and is astringent and antiseptic.

LADY'S MANTLE is one of the three British species of Alchemilla (*A. vulgaris*) generally distributed over Britain, but scarce in south-eastern England. It is a small perennial with radical leaves on long stalks, broadly orbicular in outline but divided to a third or fourth of their depth into seven or nine broad-toothed serrated lobes. The flowering stems bear a loose panicle of small inconspicuous green flowers. The drug is said to be superior in some respects to the Uva Ursi of the B.P.

PARSLEY BREAKSTONE or PIERT (*Alchemilla arvensis.*)—A little annual differing in appearance from the foregoing plant. It is seldom more than 2 or 3 inches high, much branched and softly hairy, with minute green sessile flowers. It is abundant in fields and waste gravelly places and on the tops of old walls in spring. It has a good reputation with the herbalists, and is sold at about 2*s.* per lb.

DROPWORT (*Spiræa filipendula*). A perennial herb 1 to 2 feet high, to be found in meadows and pastures and open woods all over England. It resembles Queen of the Meadows in its flowers, but they are rather larger and are sometimes tipped with red. The leaves are much more finely divided. (Its name must not cause this plant to be confused with Water Dropwort, a different herb belonging to the Umbelliferæ.) *S. filipendula* has a swelling on each root near the apex—hence its name.

QUEEN OF THE MEADOWS (*Spiræa Ulmaria*), is incorporated in many herbal beers. The leaves, like those of many other rosaceous herbs, are interruptedly pinnate.

The stock of this well-known plant is perennial, its tall stalks are annual. The sweet-scented flowers are yellowish and very numerous, arranged in masses at the summit of the stems. The herb blossoms all the summer, and is found all over the country in ditches and by streams. It is official in homœopathic medicine, and used by the herbalists, the drug fetching about *6d.* per lb. It should be collected in July.

A third species of Spiræa, called HARDHACK (*Spiræa tomentosa*) is not one of the three wild English plants of this genus, but comes from North America.

SILVERWEED (*Potentilla anserina*).—This plant, again, has "interruptedly pinnate" leaves, which are white and silvery on their under surfaces. The flowers are yellow, somewhat like Buttercups, borne singly on slender runners at the rooting nodes. Silverweed is common on damp roadsides and in pastures.

CINQUEFOIL (*Potentilla reptans*) or FIVE-LEAF GRASS is a herb abundantly found all over the country. It has slender, prostrate stems often rooting at the nodes, stalked leaves with five coarsely-toothed segments or leaflets, and somewhat large yellow flowers generally consisting of five petals.

TORMENTIL (*Tormentilla Potentilla*), another of the Potentillas, has a thick, sometimes woody rootstock. The lower leaves resemble those of Cinquefoil, but are much smaller, and the upper are sessile and consist of three, rarely five, segments. The flowers are small and bright and yellow, with four petals. The roots of this herb are astringent, and so rich in tannin that they may be used instead of oak bark.

It is not necessary, perhaps, to offer many notes on the ROSES, since Rose culture is a study in itself, there are many manuals devoted to the subject, and a large market exists for Roses apart from the drug market. Attention, however, is drawn to the fact that Rose petals will be much in demand just now, Continental supplies being cut off. The blossoms of the RED ROSE (*Rosa Gallica*) usually realise *3s.* to *4s.* per lb. when dried, but are at present worth more. Any dark red Rose petals are suitable. Roses should be gathered before they come to the full, and the petals detached from the calices in little cone-like masses, which become more or less crumpled

when dried. They require careful drying, and should be spread in thin layers and constantly turned.

The wonderful scent, Attar of Roses, is obtained from the DAMASK ROSE (*Rosa Damascena*) The oil is yielded in such minute quantities that twenty thousand blossoms are required to yield a rupee weight of it. These roses are grown chiefly in Bulgaria, but *R. centifolia*, in the south of France, also yields an Attar—preferred by many perfumers. The scent is now, however, made artificially.

The collector of the " fruits " (hips) of wild Roses (used for making pill masses) might note that those of the DOG ROSE (*Rosa canina*) are more or less ovate in shape, while those of the FIELD ROSE (*Rosa arvensis*) are more nearly globular. The flowers of Dog Rose are pink and usually sweet-scented, while those of Field Rose are white and nearly scentless.

The following formula for making Pot-pourri of Roses may not be considered out of place. It is taken from *Home and Garden* (Longmans) :—" Put alternate layers of Rose leaves and bay salt in any quantity you please in an earthen pot. Press down with a plate, and pour off the liquor that will be produced, every day for six weeks, taking care to press as dry as possible. Let the mass be broken up, and add the following ingredients, well pounded and mixed together: nutmeg, ¼ oz.; cloves, mace, cinnamon, gum benzoin, orris-root (sliced), 1 oz. each. Mix well with a wooden spoon. The Rose leaves should be gathered on a dry, sunny afternoon, and the bay salt roughly crushed before using. Orris-roots may be replaced with advantage by good violet powder."

The WILD STRAWBERRY (*Fragraria vesca*) has the "habit," foliage and flowers of the herbs belonging to the genus Potentilla, but it is to be distinguished from them by its flower base becoming succulent. The whole herb is required.

GREAT BURNET (*Sanguisorba officinalis*) is a tall perennial with an almost leafless stem divided at the top into three or four long peduncles, each bearing a single oblong head of flowers about an inch long. These blossoms are much crowded as they expand; they are more or less tinged with dark purple. The herb is chiefly found in damp calcareous mountain pastures, but it is rather local.

The drug is used as a styptic and cordial, and is sold at about 1*s.* per lb.

Note.—Great Burnet (*Sanguisorba officinalis*, Rosaceæ) must not be confused on account of the similarity of name with Salad or Lesser Burnet (*Poterium Sanguisorba*), also Rosaceæ, and Burnet Saxifrage (*Pimpinella Saxifraga*, Umbelliferæ).

CHERRY LAUREL (*Prunus Laurocerasus*).—The medicinal preparations from this plant are official in the B.P. and in homœopathy. The Cherry Laurel is a well-known garden shrub whose leaves are often used as flavouring agents in cookery. Two small glands are to be discovered glistening on either side of the midrib near the base on the under side of the fresh young leaves. These leaves are the part of the plant required. When dried, they are sold at about 9*d.* per lb., but they are also used fresh for distilling Cherry Laurel Water, still official in the B.P.

Cherry Laurel water is the only one of the thirteen official "Aquæ" to which a definite dose is assigned (two teaspoonsful), since this plant, like some others of the Rose Order, yields Hydrocyanic (Prussic) acid.

The dried leafy tops of BLACKBERRY or BRAMBLE (*Rubus fruticosus*) are used, and form a valuable remedy for dysentery. The root-bark of three American species are also used in this country, and there is a large demand for the dried leaves of the Raspberry (*Rubus Idæus*).

Rubiaceæ

The Stellatæ, a tribe of this family, is divided into four genera, three of which are represented in the herbalists' lists. The herbs specified are all common English countryside "weeds," easily recognisable by the whorled arrangement of their leaves.

CLIVERS, CLEAVERS, or GOOSE GRASS (*Galium Aparine*), is one of the fourteen species of Galium. Although an annual, this plant often manages to climb extensively by means of the asperities on the sharp angles of its stems, the edges and midribs of its leaves. It has tiny starlike greenish-white flowers, which appear in May, and last throughout the summer, and small globular fruits covered with hooked bristles. The herb is "alterative" in medi-

cine, and should be gathered when in blossom, earlier rather than later.

LADIES' BEDSTRAW (*Galium verum*). This is a smaller herb than the preceding, with only a slight asperity on the edges of its leaves. The stems are much branched at the base, and sometimes lie upon the ground. The tiny flowers are yellow and the fruits quite smooth. The leaves are in whorls of six or eight.

CROSSWORT BEDSTRAW (*Galium cruciata*), sometimes called Maywort, is an abundant herb, like *Galium verum*. It has hairy leaves in whorls of four, small yellow flowers, and smooth fruits. It blossoms in the early summer.

SWEET WOODRUFF (*Asperula odorata*). A small and charming plant belonging to the genus Asperula, abundantly found in woods and shady places. Its leaves are in whorls of about eight, and its white blossoms, far larger and more conspicuous than those of Clivers, are scentless until the herb is dried. The whole plant is then fragrant like new-mown hay. It should be gathered in May.

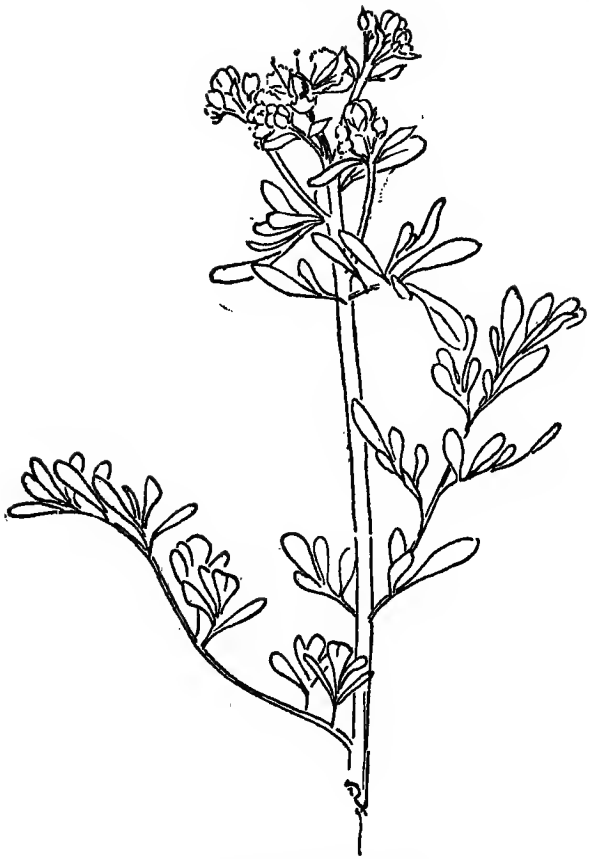
DYER'S MADDER (*Rubia tinctorum*).—The Madder extensively cultivated in southern Europe for the scarlet dye furnished by its roots differs but slightly from the Wild Madder found only in the south-western counties of England. This is a rare straggling herb, sometimes dwarf, sometimes trailing long prickly stems over bushes. It has small greenish flowers, and the fruit is a two-lobed black berry. It abounds in the Undercliff in the Isle of Wight, and extends to the Welsh coast wherever the Gulf Stream warmth is felt.

Rutaceæ

RUE, or HERB OF GRACE (*Ruta graveolens*). A well-known garden herb. Rue bears a peculiar yellow blossom in July. It can be readily grown from cuttings struck in autumn or spring, but these need a little protection. Plant in rows 15 inches apart. The herb has long enjoyed a medicinal reputation, and is official in the Homœopathic Pharmacopœia for the treatment of rheumatism.

Saxifragaceæ

BLACK CURRANT (*Ribes nigrum*). Fruit forms the "fruit basis" of many of the official lozenges of the B.P. The



RUE (*Ruta graveolens*)
Sage-green leaves. Yellow blossom, opening in July.

leaves are used in herbalist practice in febrile and inflammatory diseases, and as an infusion for hoarseness of the throat.

Scrophulariaceæ

This numerous Family, widely diffused over the globe, contains one of the most important of medicinal herbs, FOXGLOVE (*Digitalis purpurea*).

PURPLE FOXGLOVE (*Digitalis purpurea*)

The plant sometimes attain a height of 6 to 7 feet.

The flowers of Foxglove are not required, but only the large unblemished leaves of the second year's growth. The plant is a biennial, forming a rosette of leaves the first year, and its flower spike the second. These leaves are oblong ovate in shape, narrowed at the base into long winged stalks; the underside is greyish, with short soft hairs and a thick network of prominent veins. Foxglove leaves require immediate and very careful curing, and storage in air-tight boxes. They should be distinguished from those of Inula bonyza, which differ in the lower veins not running down the leaf stalk as in Digitalis. It usually grows on calcareous soil, and is unlike Digitalis in this respect.

Collectors should note that Digitalis sometimes exhibits white or yellow blossoms. This is the same plant as 'Purple' Foxglove, and its leaves should be gathered.

The Continental supplies of Foxglove leaves are stopped, but, says Leaflet No. 288, "there should be enough of the wild plant in England to satisfy home requirements if it can be collected."

Great care is necessary in collecting the herb and drying it quickly. The leaves of the second year's plants are required, although the B.P.C. tells us that no well-defined characters are known by which the leaves of the two-year-old plant can be distinguished from those of the first.

"Foxglove," says the Leaflet, "is cultivated in the partial shade of orchards, but it likes a moderate amount of sun. . . . Its culture is that of a garden plant," although it is frequently found in the wild state. "Digitalis grows best in a well-drained loose soil, rich in leaf mould. . . . About 2 lb. of seed are required per acre. . . . The seeds are uncertain in germination, but the seedlings may be readily and safely transplanted in damp weather. The leaves are hand-picked in the second year from flowering plants, the yield being about 1 to 2 tons of fresh leaves per acre. A reputation for care in picking and drying is necessary if the crop is to be sold at remunerative prices. Drying is conducted in shade, and the leaves are kept in closed boxes or barrels, as they soon deteriorate if exposed to air and moisture."

Mr. Holmes thus speaks of this plant and of the methods that might be adopted for securing a good English supply of the drug (Address before the Royal Horticultural Society):—

"With respect to *Digitalis* (Foxglove), there is an enormous quantity growing wild in damp hilly woods in this country. I have seen on the banks of the Dart, in Devonshire, a whole hillside purple with the flowers, where the coppice wood had been cut. But unfortunately large landowners object, as a rule (or perhaps it is only the gamekeepers), to people collecting the leaves until after June 15, or indeed at any period of the year, for fear of disturbing the game. It is a biennial plant, and seems to exhaust the soil, for it will often disappear entirely from places where in previous years it had been abundant—although this may be due partly to the attacks of a small pug moth (*Eupithecia pulchellata*), the larvæ of which feed on the flowers. It seems to require a fair amount of moisture and plenty of humus, but also good drainage, and is rarely found on

calcareous soils, preferring siliceous and slaty or sandy ground. But I will venture to say that if large landowners, whose soil is siliceous, will give instructions to their head gardeners to plant out the young plants, or scatter the seed in autumn, in fresh localities to which access is possible without disturbing the game, there would be no necessity to import *Digitalis* from the Continent. It is, perhaps, the most important remedy for strengthening the action of the heart, but is very liable to lose its strength if not properly dried and preserved. I have, however, been able to dry the leaves so that they retained their colour and their activity for eleven years. Foxglove leaves, properly prepared, might become a national export. Indeed, one firm does export to the United States large quantities, which are physiologically tested after drying and before being exported."

MULLEIN (*Verbascum Thapsus*)*, again, is an important herb, found wild in fair quantity, but which would benefit from cultivation, as, like Foxglove, its leaves are subject to fungoid disease. There are six British species of Mullein (*Verbascum*), but the stout erect biennial, *V. Thapsus*, with its woolly leaves and dense spike of yellow flowers, is so well known as to call for little comment. These flowers should be picked from the spike day by day as they appear. They are sold when dried at about 2*s.* 6*d.* per lb. The whole herb seems to have well-attested medicinal properties. The Homœopathic Pharmacopœia directs that it shall be gathered just as the flowering season begins. The corollas turn brown unless very carefully dried. The plant is quite a common one, and known by a variety of names, such as Hedge Taper, Torch, Blanket, Aaron's Rod, etc., throughout the country.

SPEEDWELL. Of the Veronicas or Speedwells there are fourteen native British species.

COMMON SPEEDWELL (*Veronica officinalis*) is a much-branched creeping herb found all over the country. The leaves are somewhat obovate, shortly stalked, toothed

* The plant sometimes attains the height of 7 feet. It is a biennial, producing only a rosette of leaves the first year, and the tall flowering stem the second.

The leaves of "Verbascum Thapsus," unlike those of some other species of Mullein, are densely woolly and blankety in texture. The stem leaves are alternate and sessile, their margins extending as wings down the main axis; the lower leaves may be stalked.

FLOWERING SPIKE

The flowers come out in succession. They are golden yellow with white hairs on the stamens, which forms a distinctive character. The corolla only is dried, the calyx being rejected. If the dried flowers are not kept in air-tight boxes they absorb moisture, turn brown, owing to a process of fermentation being set up, and spoil.

GENERAL "HABIT" OF MULLEIN (*Verbascum Thapsus*)

and hairy; the flowers nearly sessile, small and blue, on lateral spikes.

Veronica officinalis has sometimes been used as a substitute for tea.

BROOKLIME (*Veronica Beccabunga*), is found in wet ditches. It has procumbent stems floating at their base and rooting at the nodes; slightly toothed and rather thick smooth leaves, and small blue flowers in lateral spikes.

EYEBRIGHT (*Euphrasia officinalis*) is a little herb, parasitical on the roots of some grasses, which varies extremely in size, station, shape of leaves and colour of flowers. The whole herb is used and should be collected in July or August. Its medicinal reputation has always been good. It is official to-day in homœopathy. Culpepper said in his day that "if the herb were as much used as it is neglected it would have spoilt the trade of the spectacle maker." The drug is sold at about 1*s.* 4*d.* per lb.

The FIGWORT (*Scrophularia nodosa*) is a coarse erect perennial, not to be confused with the ranunculaceous "Figwort," or Lesser Celandine. The stem of this plant is sharply quadrangular; it has a knotted root, large heart-shaped serrate-edged pointed leaves, and pale greenish-purple flowers. It extends all over the country, being found in moist cultivated and waste grounds. It is par excellence *the* Scrophula plant on account of its value in cutaneous eruptions. The herb (the root is the important part) is sold at about 1*s.* per lb.

TOADFLAX (*Linaria vulgaris*), one of the five native British species of Linaria, is a well-known plant with linear leaves and handsome large yellow flowers. It is abundantly found in hedges and the borders of fields throughout the country, and must not be confused with the totally different herb belonging to the Sandalwood family called BASTARD TOADFLAX (*Thesium linophyllum*).

WATER BETONY (*Scrophularia aquatica*), or WATER SCROPHULARIA, is a plant much like Figwort, but generally taller. It is found in wet ditches. The flowers are dull purple in colour. The distinctions between the two plants are in the leaf and root. The leaves should be compared. Those of Figwort are broad, rounded, unequal at the base, tapering to a point above, with sharply serrate edges. Those of Water Betony are cordate oblong, with winged leaf-stalks, obtuse and "crenate-serrate" edges.

The Solanaceous Plants

It is from the plants of this important family—the Deadly Nightshade Family—that some of the most poisonous and potent alkaloids are derived. For this reason little is said as a rule about the *Solanaceæ* in such guides to domestic medicine as Dr. Fernie's *Herbal Simples*; and a caution should be issued to the herb-collector not to gather these plants or handle them in any quantity if there are any cuts or abrasions on the fingers.

All organic substances have their "active principles," and the efficiency of every drug from the vegetable kingdom is due to its active principle. As in inorganic chemistry a "base" is any substance capable of neutralising an acid—of forming with it a "salt"—so in organic chemistry these alkaloids of the vegetable kingdom are bases forming alkaloidal salts with the various acids. They are the active principles of the plants, present in such minute quantities that a very large harvest of each particular thing is needed to yield a small content of the alkaloid. To look at, an alkaloid as it issues from the hands of the manufacturing chemist after an elaborate process of extraction, is always white (in some cases it is artificially bleached), bitter to the taste, turns red litmus paper blue, and is generally insoluble in water, but soluble in alcohol or glycerine. For this reason it is the salt of an alkaloid rather than the alkaloid itself which is used in medicine.

Some plants, like Cinchona and Poppy, yield not one but a large number of alkaloids—only to be distinguished, of course, by the chemist and the analyst. Strychnine, morphine and quinine are all alkaloidal products.

Alkaloids are usually present in solution in the sap of young plants, but in the older tissues they may be stored in the solid state. Some writers hold that the life processes in the plant (similar to the life processes of eating and drinking, sleeping and breathing of other living things), which give rise to the alkaloids, are strictly analogous to those taking place in the animal body when waste matter is coupled up with other substances before being eliminated. The secretion of alkaloids by plants may be one method by which they get rid of their waste products, just as another way of doing so is by shedding their leaves

in autumn. Many of these alkaloids are poisonous to animals, and are thus protective to the plant in which they are found. Some of them, like pilocarpine, conine and nicotine, are volatile liquids. Indeed, the "empyreumatic oil" containing nicotine, formed when tobacco is burnt, possesses (narcotic and) poisonous qualities scarcely inferior to those of prussic acid.

The *Solanaceæ* are a numerous family in the tropical parts of the globe, represented only by a few stragglers in colder climates. In addition to those examples which rank among our weeds, several plants of this group are cultivated in gardens, the most notable being the potato. To mention only those which have some medicinal value, the MANDRAKE (*Mandragora officinalis*), the WINTER CHERRY (*Physalis Alkekengi*), and the TOBACCO PLANT are enumerated by the herbalists.

Turning to the herb-growing side of the question, we find there are five plants in request, of which, indeed, three, Belladonna, Henbane and Thorn Apple, are sufficiently important to be regularly and carefully cultivated on our drug farms. The Board of Agriculture gives detailed instructions with regard to them at the present time, and those who are in a position to take up drug growing must carefully study the instructions given, and those put forward by Mr. Holmes—very practical advice—in his Lecture given at Caxton Hall on July 18th.

The bulk of the world's supply of BELLADONNA (*Atropa belladonna*) is derived from wild plants growing in quantity on waste limestone places in Southern Europe. The industry is an important one in South Hungary, and we are told that a continued shortage of the plant will almost certainly exist during the next few years. Belladonna is important in medicine as the source of the alkaloids Atropine and Hyoscyamine. The plant—called variously Dwale and Deadly Nightshade and many other names—grows wild in England in calcareous woods and hedge-banks, sometimes about old castles and ruins, near which it has evidently been formerly cultivated. It must be carefully distinguished from Woody Nightshade (or Bittersweet), which is so often mistakenly called "Deadly Nightshade." The two plants are absolutely unlike. Belladonna is a stout herb, erect, with forked branches, attaining a height of from 3 to 4 feet or more, and having large

BELLADONNA (*Atropa Belladonna*) OR "DEADLY NIGHTSHADE"

From a pressed specimen. Slightly diagrammatic

This is a totally different herb to the Bittersweet or "Woody Nightshade," often called "Deadly Nightshade" by mistake. The flowers of Atropa Belladonna are purplish brown and bell-shaped: those of Bittersweet resemble potato blossom.

stalked and pointed leaves in pairs of unequal size. The flowers are large and bell-shaped, deep purple in colour, and succeeded by black berries borne singly on slender stalks, and nearly as large as a cherry. These are highly

poisonous. (The Woody Nightshade flower resembles that of the Potato; its leaves are often lobed at the base.)

Belladonna root and leaves are used in medicine. The berries ripen from August to October. This plant should be consigned to market *if wanted in the fresh state within as short a time after picking as possible;* otherwise the leaves should be dried as usual. It is one which would probably always fetch a price handled properly and in bulk. It is one which could best be dealt with by an organised group of collectors and pickers; and again, it is one which might first tempt the collector to the experiment of transplanting and gardening. Here and there it would be worth the would-be cultivator's undivided attention. It is, however, one of the most uncertain of medicinal plants grown, the crops sometimes failing entirely. The leaves of three-year-old plants are richest in alkaloidal content.

Belladonna can be propagated from seed. It grows on moist soils, but likes a chalky substratum. The Board of Agriculture gives the following careful directions with regard to its cultivation: "The seeds germinate slowly—in about six weeks. They may be drilled in spring in rows 3 feet apart, using 2 to 3 lb. of seed to the acre. [At present the seed is scarce and high-priced. The small grower might be content with ¼ of an acre by way of a beginning.] A reserve of plants is grown in seed beds to fill in gaps due to dormant seeds and winter's losses." If the seed is raised early in pans or frames, the seedlings can be planted out in May. Considerable moisture is needed to ensure germination in good time. The seedlings are liable to injury by late frosts, and a light top dressing of farmyard manure serves to preserve the young shoots from injury during sudden changes of temperature. The beds should be well and constantly weeded. The plants may be left 18 inches apart the first year. . . . Before the approach of winter they should be thinned to 2½ to 3 feet apart, or overcrowding will result. . . . The plant is dug or ploughed up during autumn in the fourth year, and the *root* is then collected, washed, and sliced, to accelerate drying. In time of great scarcity it would probably pay to dig the root in the third year. Three to 4 tons of fresh root yield a little over 1 ton of dry root. The greatest loss of plants is in wet winters. On the lighter soils there

is less danger from winter loss, but the plants are more liable to damage from drought on such soils."

The *leaves* of the Belladonna plant are used in medicine as well as the root. A gathering of leaves and "tops" may be made during the first year if the plants are strong. These leaves can also be taken in the second and third years, a second crop being obtained in September in good seasons. Five tons of fresh leaves yield about 1 ton of the dried herb.

The crop is cut with sickles in the second year while flowering in June, and growers must arrange for delivery (either to the local depot for immediate drying or to the wholesale buyer) on the day it is cut; otherwise it will rapidly deteriorate. At Dartford Belladonna is grown from genuine wild seed. The best crops of leaves are obtained in the second, third or fourth year of the plant's growth, and it is at this period that the alkaloidal content is greatest.

Mr. Beetham Wilson, a Dorking analytical chemist, made some experimental plantings and sowings, and locally obtained wild Belladonna roots and seeds when the war began. He has now over 3,000 Belladonna plants in three separate plots. They are extremely slow-growing, and those in the ground since September 1914 are only a few inches high. The plants become commercially profitable in four years, when they can be cut twice in a good season.

British Belladonna yields more atropine than the German. When the crops are established there is little hard labour, and Belladonna growing, says Mr. Wilson, would be an ideal "old man's occupation."

The cultivation of Belladonna has been practically a German monopoly. A large amount of it came from Württemberg, whence one grower alone exported 30,000 lb. to England every year.

It should quickly repay the herb collector in such places where Belladonna grows wild to gather the fruits for sale in August and October. There is a widespread demand among would-be herb growers for the seed. These seeds are taken from the berries, washed in a sieve, and dried.

Where Belladonna thrives well, there is no need to manure the ground, "but if the soil is poor the crop may be increased several-fold by the use of farmyard (or arti-

ficial) manure." The plant varies in alkaloidal content according to conditions of soil, temperature and rainfall. The beginner would be well advised to experiment in a small or co-operative way with this crop until he has gained experience with it.

Next we have the BITTERSWEET (*Solanum Dulcamara*) and BLACK SOLANUM (*Solanum nigrum*), two allied plants very frequently and mistakenly called "Deadly Nightshade." Bittersweet is Woody Nightshade—hence, probably, the confusion. Both of these plants are well known and need no description. Their leaves and flowers and fruit are most distinctive. The flowers of Bittersweet are purple with golden anthers, and much resemble those of the Potato; so do those of *Solanum nigrum*, a garden weed, but they are white. The berries of the former are globular and shining coral red; those of the latter are generally black. Bittersweet is found straggling in hedges and thickets. The twigs of plants two to three years old are required by the druggists. They should be gathered late in the autumn or in the early spring, dried, and cut into pieces about ½ inch long with a chaff-cutter. The drug is sold at about 8*d*. per lb.

HENBANE (*Hyoscyamus niger*) is an important medicinal herb. There are two varieties of Henbane—the biennial and the annual. The biennial is used in medicine. "Henbane cultivation is much the same, except that the seed must be sown in the open, as the seedlings will not stand transplanting, but must be thinned out in the rows. The seeds, however, are prone to lie dormant, and the crop is a little uncertain, sometimes drying in patches. Commercial Henbane seed is often kiln-dried and useless for sowing. The annual variety is never sown. This herb is smaller, and does not branch so freely as the biennial plant. The leaves are gathered when the plant is in flower in June and July. The root is not used in medicine. The fresh herb loses 80 to 86 per cent. of its weight in drying." Henbane seed is very small and light, and must be well mixed with fine dry soil as it is sown.

The official Henbane leaves of the B.P. are the leaves of the biennial herb, but the dried commercial drug imported from Germany and Russia, mostly of another species, are derived from the wild annual. The English-grown plant varies much in price, from 3*s*. to 6*s*. per lb.

In the wild state Henbane is found growing on rubbish-heaps, about village greens, in sandy waste places near the sea. It is a coarse, hairy, erect, branching plant with an unpleasant smell and rather ugly flowers with yellowish petals and purple veins. The steam from the seeds put

HENBANE (*Hyoscyamus niger*)
Rough, coarse, hairy herb, with crinkled yellowish flowers and purplish veins.

in a basin with boiling water is a popular remedy in some parts of the country for toothache. The small white cylindrical embryo of the seeds is thus forced out of some of them, and mistaken by ignorant sufferers for "worms" coming out of their teeth! The leaves, root and seed of

the Henbane are poisonous and produce general paralysis of the nervous system. The poisonous properties of the plant are due to the presence in its tissues or sap of two alkaloids, hyoscine and hyoscyamine. German Henbane is not as a rule so rich in these alkaloids as the English-grown herb.

Mr. Holmes' valuable remarks about Henbane show why a good crop of this plant should be so remunerative to the expert grower.

". . . The wild plant occurs in two forms, and has been found wild in sixty British counties, or rather twice the number of counties that Belladonna occurs in; and yet it always exceeds the latter in price, because it nowhere occurs profusely, and is found under circumstances that appear at first sight to be quite contradictory, growing in some places on sandy spots near the sea, in others on chalky slopes, and in cultivation flourishes in a good loam. When sown, the seed sometimes comes up quickly and flowers the first year, when only a few inches high, especially in a dry spring and summer. In other cases it produces only large leaves, in the autumn, often more than a foot long, and the second year it sends up a large branched flowering stem; but sometimes the whole of the foliage is destroyed by the larvæ of a leaf-mining fly, *Pegomyia Hyoscyami*, and the crop is rendered worthless in a week. But sometimes the seed will not germinate the first year, or even the second, and when the field has been ploughed and some other crop sown, up it comes. A curious case occurred some years ago at Weymouth, showing that the seed under certain circumstances may retain its vitality for a very long period. A house on the Parade, which had been built a hundred years, was pulled down, and next year there appeared on the cleared building-ground numbers of Henbane plants, although this plant does not occur in the neighbourhood within many miles of the spot. Even if Henbane seed comes up strongly the first year, when the large autumnal leaves decay away the large terminal bud is often destroyed by one of the many macro-lepidopterous caterpillars that, like the Agrotids, hide themselves in the soil; or floods may rot the plants in winter if grown on level ground.

"It would probably pay well to cultivate Henbane in sandy ground near the sea, especially on rich estuarine

soil, or in sandy ground in such places as the Golf Links at Westward Ho, or Dawlish Warren, where the seaweed could be used as manure and there is sufficient moisture at a depth of 2 feet for the roots to reach it. It obviously is therefore not a plant for profitable cultivation in small gardens, especially as the yield of dried leaf is extremely small."

The THORN APPLE (*Datura Stramonium*), also called Jimson Weed and Stinkweed in the United States, is "official" both in the British Pharmacopœia and in that of the United States. It is used in homœopathic medicine as well, and although it is grown on a commercial scale in this country, the wild leaves (chiefly used as an ingredient for asthma cigarettes) have been largely imported

THORN APPLE (*Datura Stramonium*)

Showing spiny capsule, white funnel shaped flower, and "habit" of the bold decorative leaves.

from Germany and Hungary. The plant is an annual and easily grown, but as a weed it is not common, and seems to occur more frequently in the southern parts of England. It has a white flower with a long tubular corolla, and rather striking large ovate irregular leaves. The leaves and seeds are used and should be gathered when the plant is in flower and fruit. A writer in the *Birmingham Mail* made the following notes on "Some Midland Species of Solanaceæ," last summer:—

"I was invited the other day to see what was believed to be a Thorn Apple growing in a garden in the Oxford Road, Acock's Green. It had apparently appeared as an 'accidental,' and was described as being about 3 feet high and about the same width. What I expected to find was the pale violet variety, which is often cultivated in gardens, and I was agreeably surprised when I was shown a really splendid specimen of the white-flowering species which occurs rarely in waste places in all the Midland counties excepting Gloucestershire. The Thorn Apple contains one of the most powerful narcotic poisons known to mankind. The leaves have an overpowering smell and a very bitter taste, while the seeds are even more poisonous than the leaves. Both seeds and leaves are used medicinally.

"The Thorn Apple makes a very attractive garden plant, and is well worth cultivation. It is an annual, and may be readily grown from seed. The plant has thick fleshy green stems, similar to those of the Dahlia, and wide-spreading branches bearing large fleshy leaves with wavy indentations. The flowers, which are tubular, white, and somewhat resembling those of the Tobacco plant, but larger, are borne in the forks of the branches. They are succeeded by a fruit about the size and shape of a walnut, but covered with spines like those of the horse chestnut. This, which gives the popular name to the plant, has four valves containing the seeds, which are black and kidney-shaped.

The variety with purple flowers alluded to above is *Datura Tatula*, occasionally used in medicine in place of Stramonium.

Datura Metel may perhaps be grown in the same way as Thorn Apple, from seed. It is also a valuable source of the mydriatic alkaloid, hyoscine.

"Although *Datura Stramonium* grows wild on a variety

of soils, it thrives best under cultivation in rich and rather heavy soils which are fairly well supplied with lime. It grows readily from seed, which may be sown in the open early in the spring in drills 3 feet apart and barely covered. When the plants are well established they are thinned to stand 12 to 15 inches apart in the row. The plants can be readily transplanted, and gaps occurring in the rows may be filled in with the plants removed in thinning. Cultivation sufficient to keep the soil free from weeds is necessary for good growth.

"Cultivated plants are frequently attacked by leaf-eating insects, especially in the early stages of growth, and it is often necessary to use lime or other insect repellents to prevent the destruction of the crop.

"The leaves, which are collected when the plant is in full bloom, may be picked in the field, but time will be saved if the entire plant is cut and dried in an artificially heated curing-room at a temperature of 100° to 110° F. When the leaves are dry they can be readily stripped from the stems, and should be baled for shipment. Such seed as is ripe may be easily thrashed out of the capsules after the leaves have been removed from the stems.

"Yields of dry leaf at the rate of 1,000 to 1,500 lb. per acre have been obtained. The yield of seed is much more variable, and is estimated to range from 500 to 2,000 lb. per acre."—*U.S.A. Bulletin*, 663.

The seeds of Thorn Apple are obtained from the thorny capsules gathered in the autumn when mature but still slightly green. The capsules should then be dried for a few days, when they will burst open and the seeds can be shaken out. *Datura Stramonium* grows well in sunny situations.

The TOBACCO PLANT (*Nicotiana Tabacum*) belongs to the Solanaceæ, but is, of course, an exotic in this country. The fresh leaves are used in homœopathic medicine. They are gathered before the flower develops. Exhibits of cigars made from English-grown tobacco are to be seen in the Museum of Economic Botany at Kew; also manufactured tobacco from plants grown in Ireland.

Thymelæaceæ

The MEZEREON (*Daphne Mezereum*) (allied to the Common Spurge Laurel) is believed to be only truly wild in some of

the southern counties. The berries of this plant, unlike those of *D. Laureola*, are red. The shrub, with its few erect branches crowded with sweet-scented purplish red flowers, is a conspicuous feature in many gardens in February and March. It blossoms before the leaves are fully out. The bark of the branches, which is the part of the plant official in homœopathic medicine, should be taken before the bush is in flower. The root and the root-bark are also used. The shrub is an easy one to grow. It likes a mild winter and a sunny spot, and it succeeds in almost any soil provided it is not allowed to become dry at the root. Previous to the outbreak of the war large quantities of Mezereon bark were imported from Germany, so that its cultivation might be worth while from an economic point of view.

Umbelliferæ

This is a very large Order represented all over the globe. The structure and arrangement of their inflorescences (of which the compound umbels of Hemlock or Fennel are typical examples) distinguish them at once from nearly all other Orders, although it is a matter of some difficulty for any one but a botanist to distinguish between many of the Umbellifers themselves. The individual flowers are usually quite small, but so grouped together as to make an imposing mass. They are not collected in a compact head on the top (receptacle) of the flower stalk, as in many of the Composites, forming what is called a "capitulum," but in terminal or lateral "umbels." These umbels are either simple, each ray bearing its own blossom; or compound, each ray giving rise to a secondary star of rays which in their turn bear the flowers. There are five or six types of umbel; also umbels which conform to none of these, and are therefore irregular. Bracts may be present, forming a "general involucre" at the point where the rays or peduncles of the umbel start from the stem, and in the case of a compound umbel at the point where the rays of the secondary umbels start from the primary ray, forming a "partial involucre." It is upon these characters, and their variations, and on the structure of the fruit, that the botanical distinctions between one umbellifer and another are largely based,

although they are by no means obvious to the untrained observer. The subdivisions of this Order of plants are as difficult as those of the Labiates.

One of the most important points to note in an umbelliferous herb is the construction of the ripe fruit or "seed." This generally separates into two carpels. Each carpel is marked with ribs, which are occasionally expanded into wings to aid in its dispersion. Between these ribs are often to be found longitudinal channels called "vittæ," filled with an oily or resinous substance. An important distinction between the deadly Hemlock and some quite innocent species of other genera, which somewhat resemble it in general appearance, lies in the fact that the carpels of the ripe fruit of Hemlock are without these oil tubes.

The medicinal part of such umbelliferous herbs as Caraway, Coriander, Anise, Dill, etc., is the "seed"—or more correctly speaking the fruit—since it is the oil distilled from the vittæ or oil cells in these fruits which is used in medicine. The Hemlock, however, yields a poisonous alkaloid, Conine.

The herbal plants of this large Order are not very numerous, and a little out-of-door familiarity with each should soon enable the collector to distinguish it from the host of its relations.

Of the Umbelliferæ used in medicine, Coriander, Caraway, Fennel and Dill are herbs of which crops should be raised on a farming scale.

CORIANDER (*Coriandrum sativum*). The sowing and culture of this plant is like that of Horehound. The "seeds" (or fruit), which are globular and rarely separate into two carpels, quickly germinate. These fruits form the part of the herb required in medicine, an essential oil being distilled from them. Coriander may be found wild as a weed of cultivation in some of the southern and eastern counties. It is an erect branching annual, 1 to 1½ foot high, with broad but deeply-cut lower leaves, fine linear upper leaves, and slender terminal umbels of five to eight rays with faintly pink flowers, whose outermost petals are larger than the central ones. Crops of Coriander are mown down when ripe, and the fruits thrashed out. Coriander "seed" is sold at 5*d*. a lb.

FENNEL (*Fœniculum dulce*). This is a well-known stout plant with very filmy (finely dissected) leaves, large

umbels of fifteen to twenty or more rays, yellow flowers, and a very characteristic smell. It occurs wild in parts of Britain, but is generally cultivated. There are several varieties, but the long French Sweet Fennel fruit obtains the best price.

"Any crop produced now," says Leaflet 288, "is almost certain to sell well. Fennel likes plenty of sun, and is adapted to dry and stony situations, but yields best on rich soil on the stiff side. From 4½ to 5 lb. of seed are sown per acre. . . . Spring sowing is necessary in England. The fruit is heavy, and a crop of 15 cwt. per acre would probably be obtained. Cutting should be done before the fruits are fully ripe, as in the case of Dill. The English crop should be grown with good profit at about 35*s.* per cwt. Present prices are slightly higher (1915)."

The fruits of Fennel are aromatic and carminative. Large quantities are used in cattle medicines, and the oil in cordials. The residue after distillation is used in cattle foods.

DILL (*Peucedanum graveolens*).—A herb like Fennel in appearance, but with smaller leaves, of Asiatic origin. It is much cultivated in fields for medicinal uses, especially in East Anglia.

"This annual is easily grown and may pay well in years to come. Cultivation is similar to that of spring oats, 10 lb. of seed being drilled to the acre. Careful attention must be given to the destruction of weeds. The plants require much watching as the time for harvesting approaches. Mowing is begun as the lower "seeds" (fruits) begin to fall, the others ripening on the straw. In dry periods cutting is best done in early morning or late evening. The loose sheaves are built into small stacks of about twenty sheaves tied together. In hot weather thrashing may be done in the field. The crop is considered rather exhaustive of soil fertility. The yield is about 7 cwt. of Dill fruits per acre, selling in normal periods at 30*s.* to 40*s.* per cwt., and at present at 45*s.* to 70*s.* per cwt." (Leaflet No. 288.)

CARAWAY (*Carum Carvi*).—A biennial herb with a tap root, sometimes found growing wild as an escape from cultivation, but much cultivated for its aromatic "seeds" (fruits) It grows to about 2 feet in height, has pinnate leaves with long sheathing footstalks, and greenish-white

umbels of from eight to ten rays. Caraway is cultivated in Essex and Kent, in Prussia and North Russia, and Holland.

PARSLEY and CELERY call for no herbalist comment, although it may be of interest to note that the oil of Parsley, which contains Apiol, is a dangerous oil of which to take an overdose. It is a green, non-viscous, oily liquid, which yields "parsley camphor" on being cooled to a low temperature.

ANGELICA (*Archangelica officinalis*).—"Though growing wild very freely, this is of commercial value only when cultivated. It is easy to raise from seed; sow in March and August. Thin to 2 feet apart. If not allowed to go to seed it is practically perennial; but as the stem and root are also required, annual sowings will be necessary. Damp soil is best. Seeds can be obtained from any good firm of seedsmen.

"The seeds also will be in demand. In fact, it is for seeds and roots that druggists ask, while the stem is also wanted by confectioners. The fruit of Angelica is used in flavouring some cordials, especially Chartreuse. The best varieties are cultivated in Saxony and Thuringia."—*H.G.A. Instructions.*

"Angelica thrives best in a moderately cool climate, and may be grown in any good soil, although a deep, fairly rich loam which is moist but well drained will give the best results. The soil should be deeply ploughed and well prepared before planting. The plant is most readily propagated from divisions of old roots, which may be set either in the fall or spring about 18 inches apart in rows. The seeds germinate very poorly if more than one year old, and it is best to sow them as soon as they are ripe in a seed bed, which should be kept moist by frequent watering if necessary. Early in the following spring the seedlings are transplanted and set about 2 feet apart each way in their permanent location. Plants may also be obtained from seeds sown in March in a spent hot-bed or in a cold frame. In order to increase the root development, the plants are often transplanted a second time, at the end of the first year's growth, and set 3 or 4 feet apart. For the same reason the tops are often cut back to prevent the formation of seed. During the growing seasons the soil should be kept mellow and free from weeds by frequent cultivation.

"The roots are usually harvested in the fall of the second year, but sometimes those of the first-year plants are marketed. After being dug, the roots are washed and dried in the open air. In order to keep out insects and to preserve the aroma it is best to store the dried root in tin containers, which can be tightly closed. The root of the European or garden Angelica found in our drug markets is imported largely from Germany."—*U.S.A. Bulletin* 663.

The GARDEN CHERVIL (*Chærophyllum sativum*), as distinguished from three wild species of Chervil, may occasionally be found in waste places as an escape from cultivation.

One of the most important of the Umbellifers is HEMLOCK or CONIUM (*Conium maculatum*). It is official in homœopathy, mentioned in the B.P.C., and also used in veterinary practice. The herb yields a poisonous alkaloid, Conine, from which alkaloidal salts are prepared. It is an erect branching biennial 3 to 5 feet high, generally distributed over Britain, and to be found about the borders of streams and fields. It is cultivated for medicinal purposes on materia medica farms. It has large but much dissected leaves *with colourless tips*; terminal umbels of (greenish) white flowers of ten to fifteen rays; carpels with five crenate ribs but *no vittæ or oil tubes* between them. It has a *hairless furrowed stem spotted with dull purple* and clothed at intervals with its fern-like leaves having spotted stalks. The whole plant has a mousy smell when bruised or broken, peculiar to itself, and quite unlike the characteristic smell of the rest of the plants of this Order. The herb should be gathered from June to August, when the flowers and fruit are both present, and the fruit from wild plants when full grown, *i.e.* in the second year, but before they ripen, *i.e.* before the colour changes from green to yellow. The fruit of Conium is of an inferior quality if gathered too late in the season. It should be thoroughly dried. It is sold at about 9*d.*, and the leaves, powdered, at 1*s.* 2*d.* per lb.

Hemlock is sometimes confused with FOOL'S PARSLEY (*Æthusa cynapium*), and this in its turn with a host of other common umbelliferous plants. The distinctions are difficult for any but a botanist to grasp, unless familiarity with the plants makes confusion between them impossible. Fool's Parsley resembles Conium, but its flowering period

is earlier—in May and June instead of August. The tips of its leaves are brownish instead of white. The plant is an annual. The nearly globular carpels of its "seeds," unlike those of Conium, have smooth ridges and two dark vittæ on the flat surface. A "character peculiar to this species"—a minute botanical distinction which may enable it to be identified—is that the "partial involucres of two or three long linear bracts are turned downwards towards the outside of the umbels." The bracts of Conium are shorter than those of Fool's Parsley, and occur also on the general umbel, which they do not in Fool's Parsley.

The two foregoing herbs are often confounded with the three species of Wild Chervil, of which *Chærophyllum sylvestre*, "WILD CHERVIL," is one of the commonest of the British umbellifers, and with *C. Anthrixus* or "BEAKED PARSLEY." All the Chervils, however, have linear, rather long fruits.

SEA HOLLY (*Eryngium maritimum*) and FIELD ERYNGO (*E. campestre*).—These are two species of the same genus, the one growing on the coast and the other inland. The roots are used in medicine. Sea Holly is abundant where it grows on the maritime sands of our shores, but is rare. It is a late-blossoming, stiff, erect, much-branched plant, with prickly leaves and pale blue globular heads of flowers. The inland plant is much like Sea Holly, but it is rarely found, being known now near Plymouth, on the ballast hills of the Tyne, near Waterford in Ireland, and in a few other localities. When cultivated, a warm, well-drained soil and sunshine are needful for the Sea Hollies. They will increase by division of the roots in spring, and cuttings of the roots will succeed in light soil if planted about 2 inches deep. The germination of the seed is slow, and the seedlings are not ready to be planted out for a year.

LOVAGE (*Levisticum officinale*), a cultivated umbellifer whose root is sold at about 1*s.* 8*d.* per lb.

MASTERWORT (*Peucedanum Ostruthium*).—This species of Peucedanum was at one time much cultivated as a pot-herb. It is a stout, erect plant, growing to the height of about 2 feet, with large greenish-white terminal umbels of forty to fifty rays.

SANICLE (*Sanicula Europæa*).—A plant which has had a great therapeutic reputation. The old proverb ran, "He

that has Sanicle needs no physician." The fruits which succeed the flowers form little burrs. The herb is of fairly frequent occurrence, sending up a straight delicate stem of about 1½ feet in height, bearing small clusters of minute white or pink flowers in small dense umbels from an abundance of glossy leaves spread flat upon the ground. Collect in June.

WILD CARROT (*Daucus Carota*).—In taste and odour the root of this plant is like that of the cultivated carrot, but its medicinal qualities are said to be superior. It is an erect annual 1 to 2 feet high, with a tap root, much-segmented leaves, and compound umbels of crowded rays, the inner ones short and the outer ones long. These latter usually close over after flowering, so as to give a ball-like form to the umbel with the fruit inside. The herb is common in Britain.

BURNET SAXIFRAGE (*Pimpinella Saxifraga*) is a herb growing to about 2 feet high, with very variable leaves and white umbels of from ten to fifteen rays. It is abundantly found on pastures and banks and roadsides, and flowers all the summer.

Other Umbelliferous herbs, like WATER DROPWORT (*Œnanthe crocata*), an exceedingly poisonous plant, commonly found in wet places in this country, are used by the homœopaths or herbalists, but are not in any great request.

WATER FENNEL (*Œnanthe Phellandrium*) is not uncommon. It is found in wet ditches and ponds, and along the courses of streams. Its umbels are smaller than those of *Œ. crocata*, and consist of about twelve rays, seldom more. The stem leaves are twice or thrice pinnate, or even capillary when under water. The "seeds" are required.

HERBE GERARDE or GOUTWORT (*Ægopodium Podagraria*) has a creeping root, a hollow furrowed stem, large lobed leaves, and compound heads of white blossom. It is a perennial, flowering during May and July. The whole herb is required, its therapeutic action being diuretic and sedative.

Urticaceæ

The flowers, leaves and seeds are used of the STINGING NETTLE (*Urtica dioica*) both in herbalist medicine and in

the concoction of herbalist beer. *Urtica urens* is used by the homœpaths. Nettle tea is a specific for gout.

PELLITORY-OF-THE-WALL (*Parietaria officinalis*) is a totally different herb to the "SPANISH PELLITORY" (*Anacyclus Pyrethrum*), official in the B.P. Pellitory-of-the-Wall is a herbalist remedy in stone and dropsy. It is a branching annual, one variety erect, the other diffuse and procumbent, with small green sessile flowers. It grows on old walls and in waste stony places, being rarer in the north than in the south. It has very brittle stems.

The COMMON or INDIAN HEMP (*Cannabis sativa* or *C. Indica*) is cultivated in cool climates for its invaluable fibre, of which hempen rope, etc., is made; but in tropical India for the narcotic resin exuded by the leaves and stem. (Canadian or Black Indian Hemp, preparations from the root of which are valuable in cardiac dropsy, is *Apocynum cannabinum*, a different plant belonging to the natural order Apocynaceæ.)

The HOP (*Humulus Lupulus*), much cultivated in Kent, is remarkable among allied plants for its twining stem. Its odorous and resinous "strobiles" (inflorescences), used in brewing, can be dried, put into pillow-cases (*pulvina lupuli*) and used as a remedy for sleeplessness, in preference to dangerous synthetic drugs. Some people do not use the hop pillow, but merely tie a bunch of the herb to the top of the bedstead.

Valerianaceæ

GREAT or WILD VALERIAN (*Valeriana officinalis*) yields from its root, which should be collected in autumn, a tincture official in the B.P. There are three species of Valerian, two of which are more or less common "weeds" in England, while other varieties are grown in gardens. The medicinal Valerian, sometimes called All-heal, has a short thick rootstock with creeping runners. The flowers are small and white, and grouped in broad terminal corymbs. The herb is generally found in moist situations, and is quite common, although commended to the attention of the medicinal plant grower. It is raised on some of the materia medica farms, and about the villages near Chesterfield in Derbyshire, where it is called Setwall. It has been largely imported, of late years, from Germany.

Valerian is cultivated from plants collected in the wild state and transplanted to the prepared land. " Preference is given in collecting to daughter plants, and young flowering plants which develop at the end of slender runners given off by the perennial rhizomes of the parent plant. Many of the young plants do not flower in the first year, but produce a luxuriant crop of leaves, and yield rhizomes of good quality in the autumn. Planting is usually done on land treated with farmyard manure. Weeding requires considerable attention, and it is advantageous to give plenty of liquid manure from time to time. The plants require plenty of water. Any flowering tops are cut off as they appear, to encourage the growth of the rhizome as much as possible.

In September and October the tops are cut off with a scythe, and the rhizomes dry up and are harvested. These " roots " are " sliced longitudinally to facilitate washing, which is done in a large perforated wooden box 2 to 2½ feet deep, secured by stakes in the bed of a local stream, a rake being used to stir up the ' hearts.' The rhizomes are dried on a shed floor about 6 feet from the ground. The wet material is strewn on perforated boards, below which a large coke stove is kept going until the drying is complete. About 1 cwt. of the dry product is obtained from 4 cwt. of fresh rhizome." English Valerian is sold by the druggists at 2*s.* 6*d.* per lb.

When grown from seed it is a quickly germinating plant. It can be sown outside or in a cold frame any time from April to August. The seed should be sown thinly, and the seedlings pricked off as soon as large enough and planted in permanent quarters. Valerian is one of those crops upon which the herb grower might well care to specialise, devoting all the ground at his disposal to it, and taking the trouble to master the process of drying and erect his own drying shed. " Growers," says the Leaflet, " may find it useful to dry their crop when possible, as they will then be less dependent on an immediate market for sale, and be able to arrange better terms of sale, unless they grow by contract, when drying may be a mere matter of convenience as between grower and buyer." The same plan on which Valerian is dried would serve equally well for other roots and rhizomes, like Dandelion, Aconite, Althea, Belladonna, Bryony, Burdock,

Calamus, Couch Grass, Dock, Liquorice, Soapwort, Arum, and others.

Verbenaceæ

VERVEIN or VERBENA (*Verbena officinalis*) is frequently found wild in the southern counties of England on roadsides and waste places. It is not, like the cultivated species, a scented herb. This latter is not found wild. The wild Verbena, an erect perennial with long spreading wiry branches, has very small lilac flowers on slender spikes. The LEMON-SCENTED VERBENA (*Aloysia citirodora*) is a cultivated plant which must be carefully sheltered from frost in the winter. Cuttings of the young shoots strike in the spring if put into pots of sandy soil and kept close till rooted. The wild herb should be collected in July. It is used by the herbalists in nervous disorders.

Violaceæ

The SWEET-SCENTED VIOLET (*Viola odorata*) is official in homœopathic medicine. The sweet-scented plant is quite a common meadow and woodland herb, although largely cultivated in several varieties. It is used in perfumery and confectionery as well as in medicine. The odour of the blossom is destroyed by drying, and the degree to which it retains its colour depends upon the care with which this process is carried out. The flower should be gathered before it is full-blown, deprived of its calyx, rapidly dried either in a heated room or in a current of very dry air, and kept in air-tight containers. Preparations of Violet have been used in the treatment of cancer.

The HEARTSEASE (*Viola tricolor*), a wild Pansy (a most variable plant), yields an official homœopathic tincture, and the various preparations of the herb were much esteemed by Dr. Hughes of Brighton. The various Violets and Pansies are cultivated for medicinal purposes at Stratford-on-Avon.

PART III

TREES AND SHRUBS

Alnus

ENGLISH ALDER. TAG ALDER.

Berberidaceæ

BARBERRY. HOLLY-LEAVED BARBERRY.

Betulaceæ

(BLACK BIRCH [American]). WHITE, EUROPEAN, or COMMON BIRCH.

Caprifoliaceæ

ELDER.
DANEWORT.
BLACK HAW (American).
WAYFARING TREE.
GUELDER ROSE.

Coniferæ

SAVINE.
JUNIPER.
ARBOR VITÆ.
NORWAY SPRUCE.
HEMLOCK SPRUCE.
YEW.
LARCH.
TAMARACK.
SCOTCH PINE or FIR.
WHITE PINE.

Cupuliferæ

SWEET CHESTNUT. OAK.

Hamamelidaceæ

(WITCH HAZEL [American].)

Juglandaceæ

COMMON WALNUT. (BLACK WALNUT [AMERICAN].)

Lauraceæ

BAY or ROMAN LAUREL.

Myricaceæ

BAYBERRY (American). SWEET GALE.

Oleaceæ

ASH.

Rhamnaceæ

ALDER BUCKTHORN. COMMON BUCKTHORN.

Rosaceæ

MOUNTAIN ASH.
APPLE.
QUINCE.
WILD CHERRY.
PLUM.
PRUNE.
PEACH.
BLACKTHORN.
HAWTHORN.

Salicaceæ

AMERICAN POPLAR.
(BALM OF GILEAD [American].)
BLACK WILLOW.
WHITE WILLOW.
PURPLE WILLOW.
BAY WILLOW.

Sapindaceæ

HORSE CHESTNUT. RED MAPLE (American).

Tiliaceæ

LIME.

Urticaceæ

ELM.
(SLIPPERY ELM) [American.]
MULBERRY

Vaccinaceæ

BILBERRY.

Alnus

ENGLISH OR COMMON ALDER (*Alnus glutinosa*) . Bark.
TAG ALDER (*Alnus serrulata*) . . . . Bark.
Tonic, etc. (Non-British species).

THE COMMON ALDER is abundant by riversides and in low-lying moist lands, but it is not so well known at sight as some other trees. It is a small tree growing to 30 or 40 feet in height. In an unfavourable soil it only attains the size of a big bush. The Alder is a catkin-bearing tree, and produces woody female catkins which

remain upon the branches throughout the winter after the ripe fruits are scattered from them in October or November.

Berberidaceæ

B.P.C. H. × BARBERRY (COMMON) (*Berberis vulgaris*) Bark, root-bark. (Only British species).
HOLLY-LEAVED BARBERRY (*Berberis Aquifolium*) Root. (Introduced from America)
Tonic, purgative, antiseptic.

The bark and root-bark of BARBERRY, BERBERRY, or PIPPERIDGE bush, collected in autumn, are tonic, purgative, and antiseptic, used chiefly for jaundice.

The Barberry is a well-known garden shrub with triple thorns at the base of the tufts of leaves on its arched and drooping branches. The yellow pendulous racemes are remarkable for their "irritable" anthers, which spring up upon being touched by insects and dust them with pollen. The bush is found growing wild all over England in copses and hedges, and is an object of particular dislike to farmers because of a fungus which lives part of its life on the leaves, and later becomes the cause of "rust" in wheat.

[The Barberry must not be confused with Bearberry, an entirely different plant, belonging to the Heath family. Distinguish also the Bayberry, *Myrica Gale* of the Myricaceæ.]

Barberry is official in homœopathic medicine, and the Homœopathic Pharmacopœia directs that the bark is to be taken in the spring, before the flowering season, or in the autumn when the leaves are falling. This bark must be carefully shaved from the branches and dried. It breaks with a short fracture of the "cortex," and has a fibrous "bast." Ordinarily the drug is worth about 1*s*. 8*d*. per lb. in the dry state. Home supplies will be insufficient just now.

The chief constituent of Barberry bark is an alkaloid called Berberine, one of the few alkaloids common to several of the natural Orders of plants. Many of the salts of berberine are used in medicine.

The COMMON BARBERRY (*Berberis vulgaris*), used in allopathic and homœopathic medicine, and another species,

the HOLLY-LEAVED BARBERRY (*B. aquifolium*) are used by the herbalists.

The *Berberis aristata* of the B.P. is an Indian species.

Betulaceæ

SWEET BIRCH (*Betula lenta*) . . . Bark. Oil B.P.
WHITE, EUROPEAN, or COMMON BIRCH (*Betula alba*) Bark, leaves. Bitter, astringent.

In official medicine the bark of the Sweet Birch, a North American species, is the source of an important anti-rheumatic and anodyne oil called Oil of Wintergreen. This oil is the same, chemically speaking, as that yielded by the American Wintergreen (*Gaultheria procumbens*), not the English Wintergreen (*Pyrola rotundifolia*). The bark of the Common Birch, which grows throughout the length and breadth of our islands, yields by destructive distillation the oil which gives the lovely scent to Russian leather, "Oleum Rusci" or "Oleum Betulinum." The tree flowers in long cylindrical drooping inflorescences of two kinds, staminate and carpellary. The bark of the Sweet Birch does not separate into layers like that of the Common Birch. It is collected in late summer. Both these trees have many valuable economic uses.

Both of these trees might be more extensively cultivated in this country with advantage, and wherever afforestation is in progress the suitability of the locality for the two Birches should be considered.

In some parts of England a Birch wine is made from the sap, which is procured in great quantities by boring a hole in the trunk of the trees early in the spring. The juice is limpid and sweet, and soon passes into vinous fermentation. Evaporated and set aside to cool, it deposits crystals of a sweetish taste resembling manna. It should be boiled for an hour with a quart of honey to every gallon of juice, together with a few cloves, bits of lemon peel, mace and cinnamon. After being fermented with yeast it should be bottled.

Caprifoliaceæ

B.P.C. ELDER (*Sambucus nigra*) . Bark, flowers, berries.
H. V. Alterative, diuretic.
H. DANEWORT (*Sambucus Ebulus*) . . Leaves.
Expectorant, diuretic, etc.

B.P. × H.	BLACK HAW (*Viburnum prunifolium*), and other American species of Viburnum . Nervine, antispasmodic, etc.	Root-bark.
	WAYFARING TREE (*Viburnum Lantana*) .	Bark.
	GUELDER ROSE (*Viburnum Opulus*) . Antispasmodic, nervine.	Bark.

Of the above, the ELDER, WAYFARING TREE, and GUELDER ROSE, rarely have a single trunk like a tree, but their medicinal products include their bark. The BLACK HAW is not English; the DANEWORT is only entered here because it belongs to the same genus as Elder; the two herbs of the family of interest to collectors are mentioned elsewhere.

The Elder is very well known, and the Danewort is a smaller species of the same genus, with an annual stem and pink stamens.

The bark of the Elder is used, and an infusion of it has been successfully employed in epilepsy. It is the flowers, however, which concern the herb collector more directly. They are much used, and are required either in the fresh state or pickled by the addition of 10 per cent. of common salt. Those who are attracted to the pharmacy of simples will be interested to read the following letter written this spring by a lady in the country who found the old prescription in a herbal, and proceeded to make excellent use of it:

ELDER-FLOWER OINTMENT AND LOTION FOR R.S.P.C.A. AND BLUE X HOSPITALS

" PENGETHLY,
" ROSS, HEREFORDSHIRE.

" SIR OR MADAM,

" May I appeal to all who are working for our horses at the Front and in the training camps at home, to make immediate use of the Elder-flower blooms now out in such profusion?

" Elder Ointment made by the following recipe is unsurpassed, both for healing wounds and soothing pain; and unless professional prejudice operates against its use I can imagine nothing more useful (of its kind) in our base hospitals.

" ELDER-FLOWER OINTMENT

" Gather the blooms—preferably not too far open—and strip off the stalks. Pour fresh liquor (unsalted lard)

into a jar or stew-pan, and fill it up with the blooms, pressing them well in. Let it simmer on the fire or in a cool oven until it turns a pale green colour. Strain it through muslin, and pour into jars, covering tightly.

"For human use, a few drops of scent (essence of Bergamot is best) may be added to each jar, pouring them on the top.

"The blooms can be gathered and dried *now*, and used later, when the winter supply of fresh liquor comes in. Country people usually have their own, but it can also be bought at a chemist's, or a farm, and often at cottages. One shillingsworth makes a large quantity of ointment.

"Elder-blooms dried now can also be sewn up in dust-proof bags and sent to the Front, with directions for their use to make a cooling lotion.

"Take the dried blooms and pour boiling water over them. When cool this lotion is ready for use. It is cooling, soothing, and healing, and will keep away flies. Also invaluable in all cases of inflammation of the lungs, etc., used internally. Very good for sore eyes.

"I am endeavouring to procure (through our Band of Mercy members and the school-children) every available blossom, avoiding only those by the side of our dusty highways. I am confident I shall be able to use every bloom later on, to the advantage and comfort of our horses.

"If others would do the same, large quantities of ointment and bags of dried blooms might still be sent abroad; but we must act at once, or all the bloom will be over. . . .

"Yours faithfully,
"C. E. SYMONDS.

"Proportions for Ointment	.	1 lb. fresh liquor (vegetable lard and 1 pint salad oil) to 2 lb. of bloom.
" " Lotion	.	1 quart water to 12 oz. of bloom.

"Ointment and bags of dried bloom to be forwarded with directions for use attached to the Blue X Society, 58, Victoria Street, S.W."

Elder-flower wine—a fermented infusion of the flowers—is far superior in perfume to elder-berry wine, but it has a strongly soporific effect.

DANEWORT or DWARF ELDER. The root of this species of Sambucus is perennial, and creeps underground, sending up annual erect, pithy, but not woody stems, from 2 to 3 feet high. The flower masses (corymbs) are smaller than those of Elder; the blossoms are sweet-scented and are white or tinted with pink stamens. The fruits are black. The Danewort is not quite so common as the Elder; it flowers later. The plant is official in homœopathy, and has always had a good reputation in herbalism. John Evelyn wrote of the Elder, "If the medicinal properties of its leaves, bark and berries were fully known, I cannot tell what our countrymen could ail from which they might not fetch a remedy from every hedge either for sickness or wounds."

The BLACK HAW is an American species of Viburnum, two English representatives of which, the WAYFARING TREE, not unfrequently met with, and the GUELDER ROSE, are valued in medicine for the substance "viburnin" contained in their barks. The cultivated species of Guelder Rose, the "Snowball Tree," bears flowers which are, botanically speaking, floral monstrosities.

Coniferæ (the Pine Family)

B.P.C.	*SAVINE (*Juniperus Sabina*) . . .	Tops or herb.
V. ×	Emmenagogue, diuretic, anthelmintic.	
H. B.P.×	*JUNIPER (*Juniperus communis*) . .	Berries.
	Diuretic, stimulant, carminative.	
H. ×	*ARBOR VITÆ (*Thuja occidentalis*) . .	Leaves, tops.
	Irritant, expectorant, etc.	
H.	NORWAY SPRUCE (*Abies excelsa*) . .	Bark.
	HEMLOCK SPRUCE (*Pinus Canadensis*) .	Bark.
	Astringent, tonic.	
H.	YEW (*Taxus baccata*)	Bark, leaves.
B.P.C.	LARCH (*Larix Europæa*) . . .	Bark.
×	Astringent, balsamic, diuretic.	
AMER.	TAMARAC (*Larix Americana*) . . .	Bark.
×	Alterative, diuretic, laxative.	
B.P.	SCOTCH PINE or FIR (*Pinus sylvestris*) and other species of Pine are the source of the B.P. oil of Pine (*Ol. Terebinthinæ*), of Stockholm Tar, and of the resin *Thus Americanum*.	
	This oil is rubefacient, irritant, diuretic.	
	WHITE PINE (*Pinus Strobus*) . .	Bark.
	Expectorant, diuretic, demulcent.	

The trees and shrubs of this family have mostly stiff very characteristic leaves which are "entire," thick and

awl-shaped, linear, or scale-like. They abound in resinous juice.

SAVINE (or SAVIN) is a South European species of Juniper often cultivated in England. The fresh plant as sold in this country consists of tufts of the terminal branches (tops) about 6 inches long. The taste of them is resinous, and the odour that of turpentine. The drug is used in veterinary work as well as by herbalists.

The JUNIPER, which is dispersed all over Britain, varies from being a shrub a few feet in height to a small tree, perhaps 20 feet high, with a girth of 5 feet. The leaves are shaped like a cobbler's awl, rigid, and end in sharp points, and are arranged round the branches in whorls of three. The blue-black berries covered with a fine bloom have a pungent flavour, and are used in making gin. They should be gathered when full grown, but unripe and green. They yield by distillation an oil official in the B.P. It is pale greenish-yellow in colour, with an aromatic scent and taste.

The ARBOR VITÆ, THUJA or THUIA, is another cultivated exotic shrub or tree, very near Cypress, but with spreading flat fan-shaped branches covered with scale-like leaves. These "tops," like the tops of Savine and the berries of Juniper, might well come within the province of the herb collector.

The bark is used of the NORWAY SPRUCE. That of the HEMLOCK SPRUCES yields a resin called Pix Canadensis or Hemlock Pitch; a homœopathic tincture is derived from the YEW; LARCH, and TAMARACK—an American tree sometimes called Black Larch, and not to be confused with the maritime but cultivated shrubs, Tamarix, often grown in England—are also laid under contribution by the herbalists. European Larch yields Venice turpentine. A brewer's licence has to be obtained for making White Spruce beer.

Cupuliferæ

SWEET CHESTNUT (*Castanea sativa* or *C. vesca*) . Leaves, fruits. Tonic, astringent. Fruits nutritive.

The SWEET CHESTNUT must not be confused with HORSE CHESTNUT (*Æsculus Hippocastanum*, Sapindaceæ). The fruits of the two trees are produced by flowers of entirely

different character; the leaves of *Castanea sativa* are leathery, broad, oblong lanceolate, with distant sharp-pointed spreading teeth along the margins; those of *Æsculus Hippocastanum* are broken up, finger fashion, into seven-toothed leaflets of different sizes. The Horse Chestnut is perhaps the grandest of all flowering trees. Its growth is rapid and the wood of no value where durability is required.

In favourable situations the Sweet Chestnut is of larger proportions and greater length of life even than the Oak, but its crops, even in the south of England, are very fitful and the nuts quite small. When properly prepared, the flour from Sweet Chestnut is said to be a capital food for children. In Italy cakes are made of it. It is the leaves, however, which are used in herbalist medicine.

OAK (*Quercus pedunculata* and *Q. sessiliflora*) . Bark.

The two varieties of Oak yield barks required in medicine and commerce. The Oak is subject to a good deal of variation, and many species have been defined, and several Oaks of foreign origin are grown in our parks. *Quercus robur* is the best known, perhaps, of the oaks. The variety *Quercus pedunculata* has the leaf short and the fruit stalked.

The Oak is more persistently attacked by insects and by a larger number than any other tree. Oak galls, used in medicine as a source of tannic acid, are the result of an insect pest on a species known as *Quercus infectoria*. The galls are imported from Asia Minor, those occurring on English oaks being of no commercial value.

Hamamelidaceæ

H. B.P. × WITCH HAZEL (*Hamamelis Virginiana*) (Spotted Alder.) . . . . Bark, leaves.
Astringent, tonic, sedative.

The leaves and bark of WITCH HAZEL, to be distinguished from the COMMON or NUT HAZEL (*Corylus Avellana*), are official in the B.P. This is an American tree with bright yellow flowers like little pieces of twisted tape. It bears no catkins, blossoms before the leaves appear, and can be grown in this country. At present the Witch Hazel is not grown in commercial quantity here, so the leaves are imported from North America. The medicinal preparations

of Witch Hazel are well known and much esteemed. It is a reliable astringent, but in what way it acts is not certain, as it is by no means rich in the ordinary astringent principle, tannin.

Juglandaceæ

COMMON WALNUT (*Juglans regia*) . Leaves, green fruits.
Alterative, detergent, laxative.

H. × BUTTERNUT (American) (*Juglans cinerea*) Bark.
Cathartic, tonic, vermifuge.

The leaves and green unripe fruits of one of the species of WALNUT (*Juglans regia*) are used by the herbalists in the treatment of herpes and scrofula. At one time the London Society of Apothecaries recognised these fruits as a valuable anthelmintic. The bark of an AMERICAN WALNUT (*Juglans cinerea*) is also used.

Walnut oil expressed with heat is a drying oil much used in the arts, and the " Walnut Cake " remaining after this expression is used for cattle feeding in Northern Italy.

Lauraceæ

× *BAY LAUREL (*Laurus nobilis*) . Leaves, fruit, oil.
Stomachic.

This Order, which, among exotics, comprises the Camphor Tree and the Cinnamon, is represented in England by the Bay, called variously as Sweet Bay, Noble or Roman Laurel. This is a shrub or small tree frequently grown in gardens. It is an evergreen whose berries yield an oil sometimes used as an application in rheumatism, etc. The leathery dark green leaves are sold at about 3*d*. per lb.

Myricaceæ

H. × *BAYBERRY (*Myrica cerifera*) . . Bark.
Stimulant, astringent, tonic.

*SWEET GALE (*Myrica Gale*) . . Shrub.
Aromatic, astringent.

BAYBERRY is not a wild English species of Myrica, but can be cultivated in this country. " If not absolutely the most useful article in botanic practice, it is certainly nearly so. It enters largely into many of the compound powders, and forms the basis of the celebrated Compo-

sition Powder" (*Potter's Cyclopædia*). The shrub yields a bark in short quilled pieces, white and peeling outside, red-brown and hard underneath.

The SWEET GALE, a bushy, resinous, catkin-bearing shrub which flowers before the leaves are out, grows wild abundantly in northern England and in the New Forest. The leaves are leathery, "lanceolate-obovate" in shape, and furnished with small resinous glands. Their scent recalls that of Bay. They are very aromatic, and have been used as a tea.

Oleaceæ

ASH (*Fraxinus excelsior*) . . . . Bark, leaves.
Antiperiodic, laxative, purgative.

The ASH is a tall handsome tree, common in Britain, with pinnate leaves, pale grey bark, and fruits with one firm wing attached. The leaves are used with success in gouty complaints.

Rhamnaceæ

v. × ALDER BUCKTHORN (*Rhamnus Frangula*) Bark.
Tonic, laxative, cathartic.
× *COMMON BUCKTHORN (PURGING BUCKTHORN) (*Rhamnus cathartica*) . . Berries.

There are two British species of Buckthorn, COMMON BUCKTHORN and ALDER BUCKTHORN, in the genus Rhamnus. (The Sea Buckthorn is a totally different shrub not related to either, and the Alder has nothing to do with any of them.)

Alder Buckthorn is a well-known purgative. The bark of the shrub constitutes the drug. The berries of the Common Buckthorn, which should be gathered in late summer, are violently cathartic in their action, and the two small trees should be carefully distinguished from each other. The Alder has no thorns or spines. The young bark is preferable to the old, and should mature a year before use. *Rhamnus cathartica* is thorny, and produces black fruits about the size of a pea.

These shrubs are related to the AMERICAN CASCARA SAGRADA (*Rhamnus Purshiana*), the bark of which is official in the B.P.

The juice of the berries of Common Buckthorn is the raw material from which the artist's "sap green" is prepared. In an unripe condition the fruits of Alder

Buckthorn also yield a good green dye, used by calico-printers and others, while the wood of *Rhamnus Frangula*, made into charcoal, is known by the gunpowder-makers as "Dogwood."

Rosaceæ

	*MOUNTAIN ASH (*Pyrus Aucuparia*) . Astringent.	Berries, bark.
	APPLE (*Pyrus Malus*)	Fruit.
×	QUINCE (*Pyrus Cydonia*) . . . Mucilaginous, demulcent.	Seeds.
	WILD CHERRY (*Prunus Cerasus*) . . Astringent, tonic, pectoral, sedative.	Bark.
	PLUM (*Prunus domestica*).	
B.P., B.P.C.	PRUNE (*Prunus* var. *Juliana* . . Laxative, refrigerant.	Dried fruits.
	PEACH (*Prunus Persica*) . . Sedative, diuretic, expectorant.	Fruit and kernels. Bark, leaves.
H.	BLACKTHORN or SLOE (*Prunus spinosa*)	Fruit.
	*HAWTHORN (*Crategus Oxycantha*) . Cardiac tonic.	Haws.

The MOUNTAIN ASH is distinguished from its immediate relations the Pear, Crab-apple, White Beam, and Wild Service Tree, by its regularly pinnate leaves. It is generally distributed over the country in the wild state, but is also much cultivated. The berries are red and globular. They furnish an acidulous and astringent gargle for sore throat.

The WILD CHERRY when wild is often a mere shrub of 6 or 8 feet in height.

The collector should notice that "Hips" are the fruit of the WILD ROSE (*Rosa canina*), "Haws" of the HAWTHORN (MAY, or WHITETHORN). The former makes an excellent material for moulding pill masses, but is now seldom used. The latter is a cardiac tonic.

Salicaceæ

H. B.P. ×	AMERICAN ASPEN (*Populus tremuloides*) . Tonic, diuretic, stimulant.	Bark.
AMER.	BALM OF GILEAD (*Populus candicans*) Stimulant, tonic, diuretic.	Buds.
B.P.	BLACK WILLOW (*Salix nigra*) . .	Berries, bark.
B.P.C. ×	Sedative, etc.	
B.P.	WHITE WILLOW (*Salix alba*) . .	Bark.
B.P.C. ×	Astringent, antiperiodic, tonic. (and other Willows).	
	*PURPLE WILLOW (*Salix purpurea*) .	Bark.
	*BAY WILLOW (*Salix pentandra*) . .	Bark.

The AMERICAN ASPEN yields a bark which holds a high position as a universal tonic. It can be used as a substitute for Peruvian bark and quinine, and is said to have none of the drawbacks which interfere with the continued administration of the latter drug.

The buds are used of another North American tree, the Balm of Gilead. They should be collected late in winter or early in spring.

An important medicinal substance, Salicin, has been found in the barks of more than twenty species of the large family of Willows, but the barks of WHITE or COMMON WILLOW (*Salix alba*), SALLOW (*Salix Caprea*), CRACK WILLOW (*Salix fragilis*), BAY WILLOW (*Salix pentandra*), PURPLE WILLOW (*Salix purpurea*), are said to yield the largest quantity. All these are trees that grow in England. The bark of the BLACK WILLOW (*Salix nigra*), a tree not enumerated among the English species, is also used. [It must be noticed that the most familiar of all the Willows, WEEPING WILLOW (*Salix Babylonica*) is not included. It is neither a native English tree nor used in any way in medicine.] "There is not in the whole of the British Flora," says Step (*Wayside and Woodland Trees*), "another genus of plants that presents such difficulties of identification as the genus Salix."

The White and Crack Willows may be regarded as timber trees, but the Bay is met with as a shrub or smallish tree, and the Purple Willow (or Osier), distinguished by the red or purple bark clothing its thin tough twigs, is small enough for its medicinal produce—the bark—to come within the herb collector's province.

Sapindaceæ

H. × *HORSE CHESTNUT (*Æsculus Hippocastanum*) . . . . . Bark, fruit.
Tonic, narcotic, febrifuge.

RED MAPLE (*Acer rubrum*) . . . Bark.
Astringent. American tree.

The bark and fruits of the Horse Chestnut yield preparations official in homœopathy, and the bark of the Red Maple, an American tree, is used for its astringent properties.

Tiliaceæ

H. × *Lime (*Tilia Europæa*) . . . Flowers.
Nervine, stimulant, tonic.

The flowers of the Lime tree, which may be derived from more than one species, are gathered with the long bract attached. They are official in homœopathic medicine, and used in herbalism. They are fragrant and easily ferment. Brandy has been distilled from them. The Belgians make a *tisane* of the Lime-tree flower which is popular as a bed-time drink.

Urticaceæ

H.B.P.C.× Elm (*Ulmus campestris*) . . . Bark.
Astringent, demulcent, diuretic.
B.P.C. × Slippery Elm (*Ulmus fulva*) . . Bark.
Pectoral, etc. (American.)
B.P.C. × *Mulberry (*Morus nigra*) . . . Fruit.
Nutritive, refrigerant, laxative.

The bark of the Common Elm is used, but not to any great extent, in herbalist medicine. The Slippery Elm is an American tree, the finely-powdered bark of which makes an excellent gruel. The coarsely powdered bark is used as a poultice. The drug is considered one of the most valuable articles in botanic practice, and "should be in every household." Mulberry fruit was at one time official in the B.P. in the form of a syrup. The bark of the tree also has medicinal properties.

Vacciniaceæ

Bilberry (*Vaccinium Myrtillus*) . . . Fruits.
Diuretic, refrigerant, astringent.

There are four low British shrubs of this division of the Heath Family, the fruits of three of which are familiar to every one. Bilberry is used in herbalist medicine; the others are Bog Whortleberry, Cowberry, and Cranberry. Bilberry, Blaeberry, Whortleberry (*Vaccinium Myrtillus*) is a shrub whose small wax-like greenish-white flowers tinged with red are followed by round black berries crowned by the short teeth of the calyx. It is common in Britain, except in the eastern counties. Cowberries and Cranberries are gathered from two of the Bilberries' immediate relations. The berries of the last-named shrub

ripen towards the end of July. Dr. Fernie says that their fresh juice is antidotal to the bacillus of typhoid fever, and that " neither the acid gastric juice of the stomach nor the alkaline contents of the bowels will interfere with such germicidal action, which extends down to the lowest part of the alimentary canal."

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